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Health Care Financing

Research Report

End Stage Renal Disase, 1993-95

Department of Health and Human Services
Health Care Financing Administration
Bureau of Data Management and Strategy

Health Care Financing Research Report

The Health Care Financing Administration (HCFA) was established to combine health care financing and quality assurance within a single agency. HCFA is responsible for the Medicare program, Federal participation in the Medicaid program, and a variety of other health care quality assurance programs.

The mission of HCFA is to promote the timely delivery of appropriate, quality health care to the beneficiaries of its programs-approximately 76 million of the Nation's aged, disabled, and poor. The agency must also ensure that program beneficiaries are aware of the services for which they are eligible, that those services are accessible and of high quality, and that agency policies and actions promote effiency and quality within the total health care delivery system.

The Bureau of Data Management and Strategy (BDMS) operates HCFA's statistical data systems and maintains the national Medicare statistical files. BDMS also serves as the focal point within the agency for information system policy planning, and data standards development.

The Office of Research and Demonstration (ORD) conducts studies and projects that demonstrate and evaluate optional reimbursement, coverage, eligibility, and management alternatives to the present Federal programs. In addition, ORD examines the impact of HCFA programs on health care status, utilization, and expenditures, as well as their effect on beneficiary access to services, health care providers, and the health care industry.

Health Care Financing Research Reports present the results of major studies and projects conducted by HCFA program staff. These reports contain significant findings that affect HCFA programs and are used as the basis for making program changes.

The End Stage Renal Disease Research Report, 1993-1995 reflects a wide range of data and analyses regarding the Medicare end stage renal disease program. This report emphasizes trends and comparisons over time, making it a standard reference source of illustrating changes in the nature of the Medicare end stage renal disease population and for examining the pattern of treatment for these patients.

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End Stage Renal Disease, 1993-95

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Health Care Financing Administration
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End stage renal disease, 1993-95

Introduction

With the enactment of section 2991 of Public Law 92-603 (1972 Amendments to the Social Security Act), full Medicare coverage was extended to persons with end stage renal disease (ESRD), effective July 1, 1973. To be eligible for Medicare benefits, the patient must first be currently or fully insured, or be eligible for Social Security benefits, or be the spouse or dependent child of such a person. Additionally, a physician must certify that the individual requires chronic dialysis or a kidney transplant to maintain life.

The Medicare program pays a prospectively determined amount for kidney transplants, for certain drug treatments, and a composite rate schedule for dialysis services. For example, as of July 1, 1995, immunosuppressive drugs prescribed for transplant recipients are covered by Medicare for 3 years after discharge. The drug, erythropoietin (EPO), used to combat anemia, was added to Medicare coverage effective June 1, 1989. Effective January 1, 1994, Medicare coverage for the self-administration of EPO was extended to all dialysis patients regardless of dialysis setting. Self-administration of EPO was previously limited to home dialysis patients only.

The Health Care Financing Administration (HCFA) is charged with the effective administration of Medicare benefits to eligible persons with ESRD. Integral to the effective management of the ESRD program is the operation of a comprehensive data base covering medical and demographic information for the Medicare ESRD population. This data base, along with other ESRD program-related data, is contained within the ESRD Program Management and Medical Information System (PMMIS). This system as required by Public Law 95-292, section (c)(1)(A), is designed to serve the needs of the Department of Health and Human Services in support of program analysis, policy development, and epidemiological research.

The principal sources of beneficiary-specific information are the Medicare billing records and incidence-specific medical information forms that report onset of ESRD, and cause of death for an ESRD beneficiary. The principal source of information on the characteristics of a kidney transplant is the United Network for Organ Sharing (UNOS) which operates the national Organ Procurement and Transplantation Network (OPTN) under contract with the Health Resources and Services Administration. The principal sources of hospital and facility information are the Online Survey Certification and Reporting System (OSCAR), Medicare certification approval notices, and an annual survey of these organizations.

Legislation passed in 1986 mandated the establishment of a national ESRD patient registry. This registry, the United States Renal Data System (USRDS), is operated by a Coordinating Center (CC). The CC is currently the University of Michigan under contact with the National Institutes of Health (NIH). The USRDS is managed through the cooperative efforts of HCFA and NIH. Further, there are two major advisory committees which are composed of representatives from Federal agencies and professionals from the renal community; these are the Executive Committee and the Scientific Advisory Committee. Also the Department of Health and Human Services (DHHS) has established the ESRD Data Advisory Committee to provide advice to the Secretary of DHHS in the formulation of policies and procedures relevant to the management, collection, and analyses of ESRD data.

The ESRD PMMIS, maintained by HCFA, provides the foundation data for the USRDS. However, the ESRD networks, under contract to HCFA, collect and provide additional data to the USRDS CC for the conduct of focused studies on the causes, progression, and treatment of ESRD. The CC disseminates a variety of reports based on these studies.

HCFA recognizes the need to disseminate the information developed from the ESRD PMMIS data and any resulting analyses of these data. The purpose of this report is to present, in a single volume, statistics concerning recent trends in ESRD treatment and detailed discussions of selected health issues involving the ESRD population. Several of the tables in this report emphasize trends and comparisons over time, making this report a standard reference on the Medicare ESRD population and on ESRD treatment patterns.

Data which have been released to HCFA from other organizations (e.g., the Department of Veterans Affairs, the Centers for Disease Control, the European Dialysis and Transplant Association, the Australia and New Zealand Dialysis and Transplant Registry, and the Canadian Renal Failure Register) have been included and identified where appropriate.

Incidence and enrollment

Program incidence

Trends in Medicare ESRD program incidence (that is, the count of new enrollees), from 1989 to 1994 are described in this section. The new Medicare ESRD population is presented by age, sex, race, primary diagnosis for renal failure, and State in the accompanying tables, along with some comparative data gathered from other Western countries on their ESRD populations.

The total counts of new Medicare ESRD beneficiaries by age, sex, race, and primary diagnosis are shown in Table 1. In 1989, 43,480 persons were added to the Medicare enrollment files as ESRD beneficiaries. By 1994, the number of new ESRD beneficiaries increased to 62,260 representing an average annual increase of 7.4 percent. The increase from 1993 to 1994 was 7.0 percent, slightly below the 5-year average.

The number of new enrollees for 1993 seems to be undercounted. The 58,217 new enrollees in 1993 is only 2.7 percent greater than the 56,669 count for 1992. By comparison, the 1994 Facility Survey indicated a 6.4 percent increase in incidence over 1992. In addition, 9.6 percent of the 1993 incident cohort had no reported cause of renal failure, indicating a missing Medical Evidence form (HCFA- 2728). This compares to about 3 to 5 percent missing HCFA-2728 in most years. The undercount appears to be consistent across all age, sex, and race groups, thus not biasing cross sectional analyses. However trend estimates and prevalence counts will be understated. Although the total count of new patients appears to be accurate in 1994, there is still an undercount of Medical Evidence forms, which will bias trend estimates for both race and cause of renal failure. Preliminary data for 1995 indicate that less than 2.0 percent of incident cases are missing the Medical Evidence form.

The "not reported" category appearing in this table, and all subsequent tables displaying primary diagnosis information, represents those patients who were added to the Program Management and Medical Information System file via the Health Insurance Master File. Primary diagnosis information is not available from the Health Insurance Master File, but only from the Chronic Renal Disease Medical Evidence Report, HCFA-2728, which was not submitted for those patients appearing in the "not reported" category.

Older persons, in particular those over 65 years of age, comprised the largest and fastest growing age group of ESRD beneficiaries with the 65-74 years of age group comprising 28.7 percent of new enrollees in 1994. The largest average annual rate of growth was for persons 75 years of age or over (12.0 percent). This same age group also experienced the largest percentage increase from 1993 to 1994 (11.4 percent). The 45 to 54 years of age group experienced the next largest increase in the rate of growth from 1993 to 1994 (9.? percent). Incidence counts for age groups under 35 remained fairly stable over these years, with average rates of change of less than 1 percent per year.

The average annual rate of increase was slightly greater for females (7.8 percent) than for males (7.1 percent). Consequently, females represented a higher percent of new enrollees in 1994 (46.6 percent) than in 1989 (45.8 percent).

Black and white persons, together, made up 93.4 percent of new enrollees in 1994. Average annual rates of growth ranged from a high of 11.9 percent of Asian persons to a low of 5.0 percent for American Indians. However, these trends should be taken with caution due to the apparent under reporting of race in both 1993 and 1994.

In terms of diagnoses, the average annual rate of growth was highest for those persons whose renal failure was attributed to diabetes (10.1 percent) and second highest for those whose renal failure was attributed to hypertension (7.4 percent). Diabetics and persons with hypertension represented the largest proportion of 1994 new enrollees together representing 66.0 percent of total program additions. As with the race distributions, the diagnostic distributions are skewed by the reporting problems in 1993 and 1994.

Medicare ESRD program incidence expressed in terms of rates per million population is shown in Table 2. From 1989 to 1994, program incidence increased from 174 enrollees per million persons to 238 enrollees per million persons, representing an average annual rate of increase of 6.5 percent. Incidence rates are strongly related to age. In 1994, these rates ranged from 8 enrollees per million persons in the under 15 years of age group to 923 enrollees per million persons in the 65 to 74 years of age group. Males had a higher incidence rate (261 enrollees per million) than did females (217 enrollees per million). Black persons had the highest incidence rate (558 enrollees per million), followed by American Indians (316 enrollees per million), white persons (195 enrollees per million), and Asian persons (166 enrollees per million). In terms of diagnoses, diabetics and persons with hypertension comprised the highest incidence rates of 90 and 68 enrollees per million population, respectively.

Medicare ESRD program incidence per million population is shown by State in Table 3. The overall trend of increasing rates of incidence is reflected in this table for individual States. Of the 50 States and the District of Columbia, all had higher program incidence rates in 1994 than in 1989. In 1987, eight States and the District of Columbia had incidence rates greater than 200 enrollees per million persons. In contrast, 32 States, District of Columbia and Puerto Rico, had incidence rates greater than 200 enrollees per million persons in 1994. No State had an incidence rate below 100 in 1994.

Variations by State in Medicare ESRD average program incidence for the years 1989 through 1994 are illustrated in Table 4, with adjustments for age, sex, and race. State incidence rates per million population are averaged across the 6 years from 1989 to 1994 to make the estimates more stable. Also, the States are ranked from highest to lowest incidence rates. Information on the unadjusted rates is shown in the first two columns and rates as adjusted for age, sex, and race are shown in the last two columns (adjusted with the indirect method). During this period, the U.S. average unadjusted incidence rate was 208 enrollees per million (calculated from Table 3). The individual State average unadjusted rates ranged from a high of 484 enrollees per million in the District of Columbia to a low of 79 enrollees per million in Alaska. Adjusting for age, sex, and race narrowed the range of incidence rates per million population. After adjustment, the individual rates ranged from a high of 255 enrollees per million in the District of Columbia to a low of 105 enrollees per million in Alaska. Black persons account for 65.8 percent of the total population in the District of Columbia. Thus, the adjusted incidence rate of 255 enrollees per million is 47.3 percent lower than its unadjusted rate. Conversely, Utah, where the black population is 0.7 percent of the total, had an adjusted rate of 170 enrollees per million, which is 49.1 percent higher than its unadjusted rate of 114 enrollees per million.

Incidence rates per million population for the years from 1989 to 1994, for a number of countries that have ESRD registries, including the United States, are presented in Table 5. These rates represent not only a difference in underlying renal failure but in the medical and economic environments in the various countries as well. In 1994, the incidence rates per million population for countries other than the United States ranged from the low of 39 per million in Poland to a high of 132 per million in Belgium.

All of the countries shown in Table 5 experienced increases in the incidence of treated renal disease between 1989 and 1994. Eleven of the countries experienced growth rates in excess of 10 percent per year. However, there is considerable year to year fluctuations in most of these countries. For example, although Sweden experienced an overall increase of 15.1 percent per year, there was a decline in incidence in both 1992 and 1994. Due to the high incidence rate among black persons, the total United States incidence rate is not comparable to European countries, which have much smaller black populations. However, in 1994, even the incidence rate among white persons in the United States was much higher than those of European countries. The white incidence rate of 195 per million population in the United States was 47.7 percent greater than the incidence rate of any of the other countries listed in Table 5.

Tables 6 and 7 show the distribution of patients by treatment category at 30 days after renal failure (Table 6) and at 1 year following renal failure (Table 7). Patients who select a home dialysis modality are required to fill out the home dialysis selection form (HCFA-382). The data from this form were used to determine whether or not the patient was dialyzing at home. If the patient received a transplant within the time frame, either 30 days or 1 year, and had not experienced a graft failure, then the patient was included in the transplant category. If the patient had not selected a home dialysis modality and did not have a functioning kidney graft and had not died, then the patient was assumed to be on in-facility dialysis.

Between 1990 and 1994, there were 271,085 persons who experienced renal failure and were Medicare entitled. By the end of the first month of renal failure (or Medicare entitlement) 87 percent of patients were receiving in-center hemodialysis. The second most common modality was continuous ambulatory peritoneal dialysis (CAPD) at 7 percent. Only 2 percent of patients had a functioning kidney transplant by the end of 30 days, and 2 percent of the patients had died.

Modality selection was significantly related to age at the time of renal failure. Sixty-one percent of pediatric patients were on in-facility dialysis after 1 month. In all other age groups, 78 percent or more of the patients were on in-facility dialysis after 1 month. Seventeen percent of pediatric patients had a functioning graft by that time; while less than 9 percent of the patients in the other age groups had a functioning graft at 30 days. Transplantation as the initial modality decreased rapidly with age, accounting for less than 1 percent of all patients over age 65. There were no significant differences in initial modality by sex. These data show that Continuous Cycling Peritoneal Dialysis (CCPD) was not frequently used by any age group other than the pediatric patients. The percentage of patients in the under 15 years of age group who were on CCPD (13 percent) was four times greater than the use of CCPD in any of the other age groups, which ranged from 3 percent in the 15-24 years of age group to 1 percent in patients 55 years of age and over. The use of CAPD was somewhat more consistent across age groups, ranging from a low of 5 percent in the 75 years of age and over group to 11 percent in the 25-34 years of age group. American Indians and whites had lower rates of in-facility dialysis 88 percent and 85 percent, respectively) than did Asians and blacks (both at 91 percent). The differences were accounted for by higher rates of CAPD by whites (8 percent) and "other" home dialysis (3 percent - mostly hemodialysis) by American Indians. There were no large differences in initial modality by cause of renal failure. However, patients whose renal failure was attributed to polycystic kidney disease were most likely to receive a transplant (6 percent) and those with hypertension were least likely to receive a transplant (less than 1 percent).

Patient status at the end of 1 year following renal failure (or date of Medicare entitlement) is shown in Table 7. Most of the changes in the distribution of patients were due to transplantation or death. By the end of 1 year, death had decreased the initial cohort by 23 percent. Sixty percent of the initial cohort remained on in-center hemodialysis by the end of 1 year. CAPD increased slightly to 9 percent of the initial cohort, while persons with a functioning graft increased to 6 percent.

The effect of mortality was very pronounced by age. Six percent of the pediatric population (under 15 years of age) and 4 percent of young adult population (15-24 years of age) died, while 29 percent of persons 65 to 74, and 41 percent of persons 75 years of age and over died during the first year of ESRD. About one-third (32 percent) of pediatric patients remained on in-center hemodialysis by the end of one year. Forty-one percent had a functioning graft with most of the remaining pediatric patients on CAPD (5 percent) or CCPD (14 percent). For other age groups, the percent of patients on in-center hemodialysis ranged from 51 percent for persons 15 to 24 years of age, to 66 percent for persons 55 to 64 years of age. Transplantation decreased rapidly with age. Only 3 percent of persons 55 to 64 years of age, and less than 1 percent of persons 65 years of age and over, had a functioning graft after 1 year.

Other demographic differences in mortality, use of CAPD, and transplantation also became more evident by 1 year following renal failure. A higher percentage of males than females had functioning kidney grafts at 1 year (7 percent and 5 percent, respectively). Whites (7 percent), Asians (6 percent), and American Indians (5 percent) were most likely to have a functioning graft at one year, while only 3 percent of blacks had a successful kidney transplant. Whites had the highest mortality rate at 26 percent with other racial groups in the 16 to 18 percent range. Whites were most likely to use CAPD (10 percent). The rate of "other" home dialysis (primarily hemodialysis) among American Indians (3 percent) was three times as high as any other racial group.

Mortality and treatment patterns by diagnostic category largely reflected underlying age and racial distributions. Patients whose renal failure was attributed to hypertension had the highest mortality rate at 26 percent, and a transplant rate of only 2 percent. These rates reflect the greater concentration of blacks in this diagnostic category who are less likely to receive a transplant, and an older age distribution, which increases the mortality rate. The experience of those with diabetes as their primary diagnosis was similar to those with hypertension, with a mortality rate of 23 percent and a transplantation rate of 4 percent. The high rate of transplantation (19 percent with a functioning graft) and the low mortality rate (7 percent) among persons whose renal failure was attributed to polycystic kidney disease is probably reflective of their youth and relatively better health status.

Table 1
Medicare end stage renal disease program incidence, by age, sex, race, and primary diagnosis: 1989-1994

Age, sex, race, and primary diagnosis	1989	1990	1991	1992	1993	1994	Percent 1994	Average annual percent change	Percent change 1993-94
	Number of new enrollees								
Total	43,480	47,354	51,986	56,669	58,217	62,266	100.0	7.4	7.0
Age									
Under 15 years	417	462	465	419	444	437	0.7	0.9	-1.6
15-24 years	1,327	1,282	1,289	1,362	1,315	1,268	2.0	-0.9	-3.6
25-34 years	3,442	3,459	3,556	3,580	3,628	3,496	5.6	0.3	-3.6
35-44 years	4,718	5,174	5,590	5,954	5,825	5,986	9.6	4.9	2.8
45-54 years	5,947	6,275	6,859	7,642	8,019	8,756	14.1	8.0	9.2
55-64 years	9,230	9,973	10,796	11,430	11,631	12,426	20.0	6.1	6.8
65-74 years	11,554	12,964	14,499	16,007	16,542	17,851	28.7	9.1	7.9
75 years or over	6,845	7,765	8,932	10,275	10,813	12,046	19.3	12.0	11.4
Sex									
Male	23,569	25,708	27,958	30,251	31,289	33,259	53.4	7.1	6.3
Female	19,911	21,646	24,028	26,418	26,928	29,007	46.6	7.8	7.7
Race									
Asian	831	1,032	1,117	1,266	1,318	1,456	2.3	11.9	10.5
Black	12,608	13,538	14,962	16,520	16,976	17,638	28.3	6.9	3.9
White	28,983	31,564	34,669	37,477	38,072	40,532	65.1	6.9	6.5
American Indian	540	580	633	792	618	689	1.1	5.0	11.5
Other/unknown	518	640	605	614	1,233	1,951	3.1	30.4	58.2
Primary diagnosis									
Diabetes	14,456	16,219	18,715	20,792	20,368	23,417	37.6	10.1	15.0
Glomerulonephritis	5,701	5,852	5,944	6,161	5,953	6,256	10.0	1.9	5.1
Hypertension	12,408	13,544	15,014	16,831	15,839	17,705	28.4	7.4	11.8
Polycystic kidney disease	1,268	1,400	1,484	1,548	1,359	969	1.6	-5.2	-28.7
Interstitial nephritis	1,389	1,397	1,538	1,569	1,392	1,585	2.5	2.7	13.9
Obstructive nephropathy	980	945	1,019	1,091	960	944	1.5	-0.7	-1.7
Other	2,678	2,866	3,588	3,931	4,157	5,030	8.1	13.4	21.0
Unknown	2,506	2,481	2,760	3,018	2,594	2,453	3.9	-0.4	-5.4
Not Reported	2,094	2,650	1,924	1,728	5,595	3,907	6.3	13.3	-30.2

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, September 1996 update, 1989-1994

Table 2

Medicare end stage renal disease program incidence rates per million population, by age, sex, race, and primary diagnosis: 1989-94

Age, sex, race and primary diagnosis	1989	1990	1991	1992	1993	1994	Average Annual percent change	Percent change 1993-94
	Number of new enrollees per million population							
Total	174	188	204	221	225	238	6.5	6.0
Age								
Under 15 years	8	8	8	8	8	8	0.5	-2.0
15-24 years	35	34	35	38	37	36	0.7	-2.0
25-34 years	80	79	80	80	80	76	-1.1	-4.9
35-44 years	128	136	142	147	140	140	1.7	-0.1
45-54 years	235	245	266	293	305	329	7.0	8.2
55-64 years	430	466	505	536	547	586	6.4	7.1
65-74 years	640	708	781	851	867	923	7.6	6.5
75 years or over	528	585	657	738	759	827	9.4	8.9
Sex								
Male	193	209	225	242	248	261	6.2	5.4
Female	155	167	184	201	203	217	6.9	6.8
Race								
Asian	120	142	146	158	157	166	6.6	5.7
Black	422	448	490	535	543	558	5.7	2.7
White	144	156	170	183	185	195	6.3	5.9
American Indian	283	296	314	383	291	316	2.3	8.7
Other/unknown	—	—	—	—	—	—	—	—
Primary diagnosis								
Diabetes	58	64	74	81	79	90	9.2	14.0
Glomerulonephritis	23	23	23	24	23	24	1.0	4.2
Hypertension	50	54	59	66	61	68	6.4	10.8
Polycystic kidney disease	5	6	6	6	5	4	-6.1	-29.3
Interstitial nephritis	6	6	6	6	5	6	1.8	12.9
Obstructive nephropathy	4	4	4	4	4	4	-1.6	-2.5
Other	11	11	14	15	16	19	12.4	20.0
Unknown	10	10	11	12	10	9	-1.3	-6.2
Not Reported	8	11	8	7	22	15	12.3	-30.8

NOTE: Average annual percent change calculated by use of compounding.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, September 1996 update, 1989-1994

Table 3

Medicare end stage renal disease program incidence rates per million population, by State: 1989-94

State	1989	1990	1991	1992	1993	1994
	Number of new enrollees per million population					
United States	173	187	204	220	224	237
Alabama	217	215	239	277	268	289
Alaska	75	60	81	74	64	117
Arizona	182	191	211	247	231	241
Arkansas	164	172	212	219	235	276
California	167	179	189	189	191	210
Colorado	128	120	137	148	148	145
Connecticut	173	179	202	200	201	222
Delaware	212	210	242	278	254	272
District of Columbia	416	450	500	511	557	469
Florida	212	224	243	266	259	274
Georgia	209	216	253	274	272	287
Hawaii	193	243	236	257	267	337
Idaho	129	144	128	119	131	156
Illinois	176	198	221	236	258	267
Indiana	155	170	187	211	213	219
Iowa	134	148	156	190	187	198
Kansas	148	156	166	167	171	132
Kentucky	142	164	193	206	212	207
Louisiana	232	244	273	305	308	334
Maine	91	114	111	127	125	142
Maryland	191	221	239	255	258	262
Massachusetts	141	148	168	188	198	197
Michigan	176	186	198	222	234	232
Minnesota	128	145	152	164	164	171
Mississippi	204	222	242	284	299	316
Missouri	172	190	210	220	237	246
Montana	135	143	166	147	169	163
Nebraska	138	139	160	182	176	182
Nevada	146	142	189	186	193	221
New Hampshire	121	117	121	130	125	138
New Jersey	201	222	241	262	273	284
New Mexico	159	170	214	206	205	313
New York	169	188	197	219	231	237
North Carolina	198	206	235	260	274	291
North Dakota	159	161	140	198	194	218
Ohio	167	182	195	213	216	247
Oklahoma	156	186	171	201	215	225
Oregon	142	141	170	161	185	183
Pennsylvania	182	215	217	239	233	260
Puerto Rico	153	157	169	197	186	214
Rhode Island	162	180	204	194	212	219
South Carolina	234	250	263	290	286	336
South Dakota	124	126	145	161	176	182
Tennessee	197	202	226	240	231	265
Texas	181	196	213	233	231	237
Utah	103	104	105	108	140	125
Vermont	102	116	153	108	126	130
Virginia	170	188	222	237	241	246
Washington	131	139	148	149	155	164
West Virginia	154	167	199	213	230	248
Wisconsin	154	155	173	189	190	197
Wyoming	94	79	102	98	111	101

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, September 1996, 1989-1994

Table 4
Average Medicare end stage renal disease program incidence rates per million population, by State: 1990-94

State	Unadjusted Rate	Unadjusted Rank	Age, sex, race, adjusted Rate	Age, sex, race, adjusted Rank
	Number of new enrollees per million population			
Alabama	251	7	220	11
Alaska	79	52	105	51
Arizona	218	16	224	9
Arkansas	213	19	198	29
California	188	30	181	37
Colorado	138	45	163	44
Connecticut	196	25	200	26
Delaware	245	10	240	6
District of Columbia	484	1	255	1
Florida	247	9	212	19
Georgia	253	6	245	4
Hawaii	256	5	142	49
Idaho	134	46	163	45
Illinois	226	14	217	13
Indiana	193	28	211	21
Iowa	169	37	185	34
Kansas	165	38	179	38
Kentucky	187	31	207	24
Louisiana	283	2	254	2
Maine	118	49	142	48
Maryland	238	12	216	14
Massachusetts	173	36	188	31
Michigan	208	21	212	18
Minnesota	154	41	186	33
Mississippi	261	4	219	12
Missouri	213	20	215	16
Montana	154	42	170	41
Nebraska	163	40	183	36
Nevada	181	32	192	30
New Hampshire	126	47	163	46
New Jersey	247	8	243	5
New Mexico	195	27	200	27
New York	207	22	183	35
North Carolina	245	11	224	8
North Dakota	178	34	203	25
Ohio	203	23	209	22
Oklahoma	192	29	187	32
Oregon	164	39	179	39
Pennsylvania	224	15	215	15
Puerto Rico	180	33	—	—
Rhode Island	196	26	208	23
South Carolina	277	3	246	3
South Dakota	152	43	166	42
Tennessee	227	13	224	10
Texas	216	18	227	7
Utah	114	50	170	40
Vermont	123	48	157	47
Virginia	218	17	213	17
Washington	148	44	166	43
West Virginia	201	24	211	20
Wisconsin	176	35	200	28
Wyoming	98	51	121	50

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, September 1996, 1989-1994

Table 5
Medicare end stage renal disease program incidence rates per million population, by State: 1989-94

Country	1989	1990	1991	1992	1993	1994	Average annual percent change	Percent change 1993-94
	Number of patients per million population							
Total EDTA [1]	45	44	48	46	55	59	5.6	7.3
Austria	89	101	105	110	94	106	3.7	13.0
Belgium	77	97	87	90	103	132	11.3	28.6
Bulgaria	38	40	50	40	53	56	7.8	6.1
Czechoslovakia	39	46	56	61	92	105	22.1	14.3
Denmark	54	52	48	60	96	86	9.9	-10.6
Finland	47	49	54	54	82	60	5.0	-26.5
France	70	57	77	74	80	70	0.0	-12.2
Germany	84	79	94	75	81	125	8.4	55.5
Greece	53	75	71	76	118	103	14.2	-12.9
Hungary	28	42	45	51	65	62	17.3	-4.0
Iceland	16	60	50	39	66	43	22.0	-34.3
Ireland	29	42	48	31	34	58	14.6	68.5
Israel	67	115	106	92	113	89	5.8	-20.9
Italy	54	50	54	52	90	72	5.7	-20.9
Luxembourg	32	71	79	82	82	75	18.3	-8.5
Netherlands	56	69	60	69	83	84	8.4	0.6
Norway	51	67	65	63	49	70	6.6	43.0
Poland	20	19	26	26	27	39	14.7	47.5
Portugal	49	75	86	54	75	98	14.9	30.8
Spain	56	60	60	63	66	80	7.4	21.2
Sweden	50	66	100	92	116	102	15.1	-12.5
Switzerland	66	77	96	68	75	84	4.9	11.6
United Kingdom	32	61	60	65	60	56	12.1	-5.4
Australia	52	56	57	61	66	72	6.7	9.1
New Zealand	52	53	62	69	66	69	5.8	4.5
Canada	81	87	98	100	101	104	5.1	3.3
United States [2]	174	188	204	221	225	238	6.5	6.0
Asian	120	142	146	158	157	166	6.6	6.7
Black	422	448	490	535	543	558	5.7	2.7
White	144	156	170	183	185	195	6.3	5.9
American Indian	283	296	314	383	291	316	2.3	8.7

European Dialysis & Transplant Association

Includes only Medicare entitled end stage renal disease (ESRD) patients. Of all ESRD patients in the United States, it is estimated that 7 to 10 percent are not Medicare eligible.

SOURCES Health Care Financing Administration, Bureau of Data Management and Strategy. Data from the Program Management and Medical Information System, September 1996 update, 1989-94; and U.S Department of Commerce, Bureau of the Census. Population Estimates and Projects. Current Population Reports Series P-25, No. 998 Washington. U.S Government Printing Office.

Table 6

Medicare end-stage renal disease program incidence modality, by age, sex, race and primary diagnosis, patients' status at 30 days: 1990-94

Age, sex, race and primary diagnosis	Total patients	Percent total	Outpatient	CAPD[1]	CCPD[2]	Other	Transplant	Death
			Percent of patients					
Total	271,085	100	87	7	1	1	2	2
Age								
Under 15 years	2,155	100	61	5	13	2	17	2
15-24 years	6,275	100	78	9	3	1	9	*
25-34 years	17,123	100	80	11	2	1	6	1
35-44 years	27,519	100	82	10	2	1	4	1
45-54 years	36,053	100	86	9	2	1	2	1
55-64 years	54,322	100	89	7	1	1	1	2
65-74 years	77,818	100	89	6	1	1	*	3
75 years or over	49,820	100	90	5	1	1	*	4
Sex								
Male	145,435	100	86	7	1	1	2	2
Female	125,650	100	87	7	1	1	2	2
Race								
Asian	6,055	100	91	6	1	*	1	1
Black	77,749	100	91	5	1	1	*	1
White	179,460	100	85	8	1	1	2	2
American Indian	3,237	100	88	6	1	3	1	1
Other/Unknown	4,584	100	91	4	1	*	2	2
Primary diagnosis								
Diabetes	97,670	100	87	8	1	1	1	2
Glomerulonephritis	29,558	100	84	9	2	1	3	1
Hypertension	77,930	100	89	6	1	1	*	3
Polycystic kidney disease	6,690	100	79	11	2	1	6	1
Interstitial nephritis	7,376	100	85	8	1	1	3	1
Obstructive nephropathy	4,906	100	87	5	1	1	3	2
Other	19,068	100	86	7	2	1	2	3
Unknown	13,135	100	86	7	1	1	2	3
Not Reported	14,752	100	86	5	1	1	5	3

[1] Continuous ambulatory peritoneal dialysis
[2] Continuous cycling peritoneal dialysis

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, September 1996, 1990-1994.

Table 7

Medicare end stage renal disease program incidence, modality, by age, sex, race and primary diagnosis, patients' status at 30 days: 1990-94

Age, sex, race and primary diagnosis	Total patients	Percent total	Outpatient	CAPD[1]	CCPD[2]	Other	Transplant	Death
			Percent of patients					
Total	271,085	100	60	9	2	1	6	23
Age								
Under 15 years	2,155	100	32	5	14	2	41	6
15-24 years	6,275	100	51	11	3	1	29	4
25-34 years	17,123	100	53	13	2	1	23	8
35-44 years	27,519	100	58	12	2	1	16	10
45-54 years	36,053	100	64	12	2	1	9	12
55-64 years	54,322	100	66	9	1	1	3	19
65-74 years	77,818	100	61	8	1	1	*	29
75 years or over	49,820	100	53	4	1	1	*	41
Sex								
Male	145,435	100	59	9	2	1	7	23
Female	125,650	100	61	9	2	1	5	23
Race								
Asian	6,055	100	68	8	1	1	6	16
Black	77,749	100	71	7	1	1	3	17
White	179,460	100	54	10	1	1	7	26
American Indian	3,237	100	65	8	1	3	5	18
Other/Unknown	4,584	100	69	6	1	1	4	17
Primary diagnosis								
Diabetes	97,670	100	61	9	2	1	4	23
Glomerulonephritis	29,558	100	58	12	2	1	13	14
Hypertension	77,930	100	61	7	1	1	2	26
Polycystic kidney disease	6,690	100	57	13	3	2	19	7
Interstitial nephritis	7,376	100	59	10	2	1	10	19
Obstructive nephropathy	4,906	100	58	6	1	1	8	25
Other	19,068	100	52	9	2	1	8	29
Unknown	13,135	100	56	8	2	1	8	25
Not Reported	14,752	100	61	7	2	1	10	19

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[1] Continuous ambulatory peritoneal dialysis

[2] Continuous cycling peritoneal dialysis

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, September 1996, 1990-1994.

Program enrollment

Trends in Medicare ESRD program total enrollment for the years 1989 to 1994 are described in this section. Tables are presented that show Medicare ESRD enrollment by age, sex, race, and primary diagnosis. Enrollment is divided into two groups of persons: those on dialysis and those with a functioning graft. Enrollment counts are taken as of December 31 each year and reflect the patients dialysis or transplant status as of that date. Medicare enrollment by dialysis and functioning graft patient groups for the years 1978 to 1994 is presented in Table 8. During this time, enrollment grew from 45,204 to 232,193 an average annual rate of increase of 10.8 percent. The number of patients on dialysis grew at a slightly slower rate of 10.0 percent per year (from 39,719 in 1978 to 183,175 in 1994). The number of patients with a functioning kidney graft increased at a faster annual rate of 14.7 percent (from 5,485 in 1978 to 49,018 in 1994). The rapid growth in patients with a functioning graft was due, in part, to increases in the number of transplants performed and, in part, to increased graft survival rates. As a result of these transplantation trends, patients with a functioning graft increased from 12.1 percent of the total Medicare ESRD population in 1978 to 21.1 percent in 1994. However, the increase in the functioning graft population from 1993 to 1994 was only 5.3 percent, reflecting the leveling of the number of transplants in the most recent years.

The Medicare dialysis patient population by age, sex, race, and primary diagnosis for the years 1989 to 1994 is shown in Table 9. The growth rate in the dialysis patient population has been greatest for persons 75 years of age and over, primarily as a result of the increase in program incidence rates shown in Tables 1 and 2. In 1989, persons 75 years of age and over accounted for 13.7 percent of the total dialysis patient population, increasing to 17.1 percent in 1994. The largest populations in absolute numbers were those in the two age groups between 55 and 74 years of age. Together these two groups accounted for 47.3 percent of the total dialysis patient population. In 1994, 52.4 percent of the Medicare dialysis population were male and 47.6 percent were female. White persons comprised 57.9 percent of the population, while black persons accounted for 36.1 percent. The major diagnoses reported as primary causes of renal failure were diabetes (30.9 percent), hypertension (28.0 percent), and glomerulonephritis (13.4 percent).

Medicare dialysis patient population expressed as enrollment per million population is shown in Table 10. Overall, dialysis patient enrollment increased from 479 per million population in 1989 to 701 per million in 1994--an average annual increase of 7.9 percent. Dialysis enrollment rates varied markedly with age, ranging (in 1994) from 15 per million population for persons under 15 years of age to 2,575 per million population for persons 65 to 74 years of age. Males had an enrollment rate per million that was 15.5 percent greater than that of females (753 per million and 652 per million, respectively). Dialysis patient enrollment for black persons was almost four times as great as for white persons (2,095 per million and 511 per million, respectively). Dialysis patient enrollment per million population was lowest for Asians (498 per million) while American Indians had a rate more than twice that of whites (1,050 per million).

The Medicare ESRD population with a functioning graft is presented in Table 11 by age, sex, race, and primary diagnosis for the years 1989 to 1994. The same population in terms of rates per million population is shown in Table 12. In contrast to the dialysis population, those patients with functioning grafts come largely from the younger age groups. Table 11 shows that, of patients with functioning grafts in 1989 and 1994, 81.2 percent and 74.9 percent, respectively, were under 55 years of age. The percent increase from 1989 to 1994 was greater for each of the three oldest age groups than for any of the other age groups. Taken together, the 55 years of age and older group increased at an annual rate of 15.9 percent from 1989 to 1994; the under 55 years of age group increased by only 7.6 percent per year over the same period. In 1994, 61.1 percent of the Medicare ESRD population with a functioning kidney graft were male and 76.1 percent were white persons. The major diagnoses reported as the primary cause for renal failure were glomerulonepritis (25.0 percent) and diabetes (22.3 percent).

In terms of rates per million population (Table 12), the ESRD functioning graft population increased from 126 per million in 1989 to 188 per million in 1994--a 8.4 percent annual rate of increase. In 1994, those persons 35 to 44 years of age, 45 to 54 years of age, and 55 to 64 years of age had the highest rates per million population (305 per million, 444 per million, and 378 per million, respectively). The rate was higher for males (235 per million) than for females (142 per million). The rate per million population was highest for black persons (297 per million) followed by American Indians (255 per million), white persons (180 per million), and Asian persons (144 per million).

Table 8
Medicare end stage renal disease program enrollment, by dialysis and functioning graft: 1978-94

Year	Patients on dialysis		Patients with a functioning graft		All patients	
	Number	Percent	Number	Percent	Number	Percent
1978	39,719	87.9	5,485	12.1	45,204	100.0
1979	46,483	87.0	6,923	13.0	53,406	100.0
1980	53,149	86.6	8,202	13.4	61,351	100.0
1981	59,440	86.3	9,451	13.7	68,891	100.0
1982	66,455	85.5	11,310	14.5	77,765	100.0
1983	74,465	84.8	13,397	15.2	87,862	100.0
1984	81,006	83.4	16,147	16.6	97,153	100.0
1985	87,442	81.9	19,285	18.1	106,727	100.0
1986	93,606	80.2	23,152	19.8	116,758	100.0
1987	101,169	79.3	26,452	20.7	127,621	100.0
1988	109,359	79.1	28,878	20.9	138,237	100.0
1989	119,860	79.3	31,373	20.7	151,233	100.0
1990	131,414	79.2	34,592	20.8	166,006	100.0
1991	144,570	79.0	38,351	21.0	182,921	100.0
1992	158,175	79.0	42,169	21.0	200,344	100.0
1993	170,058	78.5	46,554	21.5	216,612	100.0
1994	183,175	78.9	49,018	21.1	232,193	100.0
Average annual percent change	—	10.0	—	14.7	—	10.8
1993-94 percent change	—	7.7	—	5.3	—	7.2

NOTE: Enrollment is as of December 31 of each year and includes Medicare patients who are alive and currently entitled. Average annual percent increase calculated by use of compounding.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, September 1996 update, 1978-94.

Table 9
Medicare end stage renal disease program enrollment for dialysis patients by age, sex, race, and primary diagnosis: 1989-94

Age, sex, race and primary diagnosis	1989	1990	1991	1992	1993	1994	Percent 1994	Average annual percent change	Percent change 1993-94
	Number of persons								
Total	119,860	131,414	144,570	158,175	170,058	183,175	100.0	8.9	7.7
Age									
Under 15 years	679	735	742	738	760	808	0.4	3.5	6.3
15-24 years	3,031	3,106	3,152	3,286	3,436	3,438	1.9	2.6	0.1
25-34 years	9,330	9,860	10,321	10,641	11,016	11,302	6.2	3.0	2.6
35-44 years	14,807	16,224	17,644	19,003	20,109	21,115	11.5	7.4	5.0
45-54 years	18,104	19,405	21,459	23,823	26,021	28,638	15.6	9.6	10.1
55-64 years	25,928	28,018	30,264	32,450	34,448	36,750	20.1	7.2	6.7
65-74 years	31,496	35,069	38,932	42,880	46,216	49,778	27.2	9.6	7.7
75 years or over	16,480	18,997	22,056	25,354	28,052	31,346	17.1	13.7	11.7
Sex									
Male	62,538	68,728	75,672	82,645	89,144	96,015	52.4	9.0	7.7
Female	57,322	62,686	68,898	75,530	80,914	87,160	47.6	8.7	7.7
Race									
Asian	2,047	2,455	2,948	3,363	3,898	4,376	2.4	16.4	12.3
Black	41,820	46,214	51,203	56,714	61,496	66,200	36.1	9.6	7.6
White	72,244	78,644	86,022	93,344	99,246	106,070	57.9	8.0	6.9
American Indian	1,323	1,529	1,742	2,052	2,153	2,286	1.2	11.6	6.2
Other/unknown	2,426	2,572	2,655	2,702	3,265	4,243	2.3	11.8	30.0
Primary diagnosis									
Diabetes	29,088	34,057	40,099	46,255	50,324	56,536	30.9	14.2	12.3
Glomerulonephritis	19,119	20,237	21,282	22,454	23,409	24,616	13.4	5.2	5.2
Hypertension	3[illegible]37	35,414	39,833	44,531	47,345	51,236	28.0	10.1	8.2
Polycystic kidney disease	5,154	5,301	5,588	5,813	5,879	5,675	3.1	1.9	-3.5
Interstitial nephritis	4,564	4,783	5,000	5,279	5,300	5,593	3.1	4.2	5.5
Obstructive nephropathy	3,246	3,291	3,449	3,612	3,625	3,653	2.0	2.4	0.8
Other	6,268	6,998	8,145	9,256	10,305	11,998	6.6	13.9	16.4
Unknown	8,856	9,038	9,338	9,674	9,632	9,650	5.3	1.7	0.2
Not Reported	11,928	12,295	11,836	11,301	14,239	14,218	7.8	3.6	-0.1

NOTE: All calculations are based on unrounded numbers. Average annual percent change calculated by use of compounding.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, September 1996 update, 1989-94.

Table 10

Medicare end stage renal disease program dialysis enrollment per million population, by age, sex, race, and primary diagnosis: 1989-94

Age, sex, race and primary diagnosis	1989	1990	1991	1992	1993	1994	Average annual percent change	Percent change 1993-94
	Number of enrollees per million							
Total	479	521	568	616	657	701	7.9	6.8
Age								
Under 15 years	13	13	14	13	14	15	3.1	5.9
15-24 years	80	83	86	91	96	98	4.2	1.7
25-34 years	217	226	233	237	242	245	2.5	1.2
35-44 years	402	426	450	470	483	493	4.2	2.1
45-54 years	715	759	831	913	988	1,077	8.5	9.0
55-64 years	1,208	1,308	1,417	1,523	1,620	1,733	7.5	6.9
65-74 years	1,745	1,916	2,097	2,279	2,423	2,575	8.1	6.3
75 years or over	1,272	1,431	1,622	1,821	1,970	2,152	11.1	9.3
Sex								
Male	513	559	610	660	706	753	8.0	6.8
Female	447	485	528	574	610	652	7.8	6.8
Race								
Asian	297	337	385	419	463	498	10.9	7.4
Black	1,401	1,531	1,676	1,836	1,968	2,095	8.4	6.5
White	358	388	422	455	481	511	7.4	6.3
American Indian	693	779	864	991	1,014	1,050	8.6	3.5
Other/unknown	—	—	—	—	—	—	—	—
Primary diagnosis								
Diabetes	116	135	158	180	194	216	13.2	11.4
Glomerulonephritis	76	80	84	87	90	94	4.3	4.3
Hypertension	127	140	157	173	183	196	9.2	7.3
Polycystic kidney disease	21	21	22	23	23	22	1.1	-4.3
Interstitial nephritis	18	19	20	21	20	21	3.2	4.6
Obstructive nephropathy	13	13	14	14	14	14	1.5	-0.1
Other	25	28	32	36	40	46	12.9	15.4
Unknown	35	36	37	38	37	37	0.8	-0.7
Not Reported	48	49	47	44	55	54	2.7	-1.0

NOTE: All calculations are based on unrounded numbers. Average annual percent change calculated by use of compounding.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, September 1996 update, 1989-94.

Table 11

Medicare end stage renal disease program enrollment for patients with functioning grafts, by age, sex, race, and primary diagnosis: 1989-94

Age, sex, race and primary diagnosis	1989	1990	1991	1992	1993	1994	Percent 1994	Average annual percent change	Percent change 1993-94
	Number of persons								
Total	31,373	34,592	38,351	42,169	46,554	49,018	100.0	9.3	5.3
Age									
Under 15 years	843	831	898	953	1,024	961	2.0	2.7	-6.2
15-24 years	2,231	2,318	2,480	2,556	2,616	2,601	5.3	3.1	-0.6
25-34 years	6,626	6,997	7,480	7,765	8,237	8,243	16.8	4.5	0.1
35-44 years	8,860	9,838	10,733	11,630	12,619	13,093	26.7	8.1	3.8
45-54 years	6,908	7,615	8,474	9,602	10,907	11,795	24.1	11.3	8.1
55-64 years	4,557	5,215	6,002	6,712	7,521	8,017	16.4	12.0	6.6
65-74 years	1,285	1,693	2,172	2,807	3,428	4,038	8.2	25.7	17.8
75 years or over	63	85	112	144	202	270	0.6	33.8	33.7
Sex									
Male	19,428	21,327	23,485	25,677	28,274	29,968	61.1	9.1	6.0
Female	11,945	13,265	14,866	16,492	18,280	19,050	38.9	9.8	4.2
Race									
Asian	637	765	879	1,040	1,175	1,268	2.6	14.8	7.9
Black	5,754	6,331	7,026	7,752	8,636	9,374	19.1	10.3	8.5
White	24,368	26,797	29,652	32,517	35,802	37,289	76.1	8.9	4.2
American Indian	325	368	422	465	510	555	1.1	11.3	8.8
Other/unknown	289	331	372	395	431	532	1.1	13.0	23.4
Primary diagnosis									
Diabetes	6,096	6,935	7,887	8,753	10,001	10,924	22.3	12.4	9.2
Glomerulonephritis	8,295	9,147	10,100	10,964	11,863	12,243	25.0	8.1	3.2
Hypertension	4,017	4,486	4,970	5,638	6,375	6,953	14.2	11.6	9.1
Polycystic kidney disease	2,189	2,482	2,760	3,120	3,439	3,553	7.2	10.2	3.3
Interstitial nephritis	1,352	1,496	1,683	1,834	2,025	2,033	4.1	8.5	0.4
Obstructive nephropathy	825	894	987	1,100	1,215	1,237	2.5	8.4	1.8
Other	2,300	2,557	2,886	3,261	3,669	3,929	8.0	11.3	7.1
Unknown	2,472	2,560	2,801	3,061	3,321	3,447	7.0	6.9	3.8
Not Reported	3,827	4,035	4,277	4,438	4,646	4,699	9.6	4.2	1.1

NOTE: All calculations are based on unrounded numbers. Average annual percent change calculated by use of compounding.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, September 1996 update, 1989-94.

Table 12

Medicare end stage renal disease program enrollment per million population for patients with functioning grafts, by age, sex, race, and primary diagnosis: 1989-94

Age, sex, race and primary diagnosis	1989	1990	1991	1992	1993	1994	Average annual percent change	Percent change 1993-94
	Number of patients per million							
Total	126	137	151	164	180	188	8.4	4.4
Age								
Under 15 years	16	15	16	17	19	17	2.2	-6.5
15-24 years	59	62	67	71	73	74	4.7	1.0
25-34 years	154	160	169	173	181	179	3.0	-1.3
35-44 years	241	259	273	288	303	305	4.9	0 8
45-54 years	273	298	328	368	414	444	10.2	7.1
55-64 years	212	244	281	315	354	378	12 2	6.9
65-74 years	71	92	117	149	180	209	24 0	16.2
75 years or over	5	6	8	10	14	19	30.7	30.7
Sex								
Male	159	173	189	205	224	235	8.1	5.0
Female	93	103	114	125	138	142	8.9	3.3
Race								
Asian	92	105	115	129	140	144	9.3	3.3
Black	193	210	230	251	276	297	9.0	7.3
White	121	132	145	159	174	180	8.3	3.6
American Indian	170	188	209	225	240	255	8.4	6.1
Other/unknown	—	—	—	—	—	—	—	—
Primary diagnosis								
Diabetes	24	27	31	34	39	42	11.4	8.3
Glomerulonephritis	33	36	40	43	46	47	7.2	2.3
Hypertension	16	18	20	22	25	27	10.6	8.1
Polycystic kidney disease	9	10	11	12	13	14	9.2	2.4
Interstitial nephritis	5	6	7	7	8	8	7.5	-0.5
Obstructive nephropathy	3	4	4	4	5	5	7.5	0.9
Other	9	10	11	13	14	15	10.3	6.2
Unknown	10	10	11	12	13	13	5.9	2.9
Not Reported	15	16	17	17	18	18	3.3	0.3

NOTE: All calculations are based on unrounded numbers. Average annual percent change calculated by use of compounding.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, September 1996 update, 1989-94.

Patient treatment trends

Treatment trends

The statistics in this section are taken from the annual ESRD Facility Survey, Form HCFA-2744. The exceptions are Tables 20 through 22, which are based on analyses of data from the Organ Procurement and Transplant Network (OPTN) which is linked with beneficiary entitlement data in the ESRD PMMIS. The facility survey covers all patients receiving services at Medicare-approved dialysis facilities and transplant centers. All figures shown are as of December 31 for each year. Tables displaying kidney transplants and dialysis treatment data reflect activities that occurred during the calendar year. Because they include both Medicare entitled and non-Medicare patients, these numbers are not comparable to those for the Medicare ESRD population presented in other sections of this report. Also, because only Medicare-approved facilities are surveyed, the numbers do not represent the entire U.S. ESRD population. However, approximately 98 percent of the total U.S. ESRD population are represented in these data. Not included in these data are patients who are dialyzing at non-Medicare approved Department of Veterans Affairs medical centers and patients dialyzing at military hospitals. These caveats must be kept in mind when using Tables 13-18.

Dialysis patients

Counts of dialysis patients by Medicare and non-Medicare categories for years 1983 through 1995 are shown in Table 13. The number of Medicare entitled patients increased from 67,569 in 1983 to 183,585 in 1995, an average annual rate of increase of 8.7 percent. The non-Medicare entitled dialysis population increased at a higher rate of 11.6 percent during these years. In 1983, non-Medicare patients accounted for 6.1 percent of dialysis patients. By 1995, non-Medicare patients accounted for 8.3 percent of all dialysis patients. From 1994 to 1995, the increase for Medicare entitled patients was 6.4 percent, compared to 15.7 percent for non-Medicare entitled patients.

Data on the ESRD dialysis population, by type and place of dialysis for the years 1990 through 1995, are shown in Table 14. During these years, the total number of dialysis patients, for the facilities reporting, increased from 129,800 in 1990 to 200,162 in 1995, or an average annual growth rate of 9.0 percent.

By far the most common dialysis modality is outpatient hemodialysis. The number of patients receiving dialysis in this modality increased from 106,432 in 1990 (82.0 percent of all dialysis patients) to 166,173 in 1995 (83.0 percent of all dialysis patients). In 1995, the hemodialysis modality accounted for 99.7 percent of all patients dialyzing in the outpatient setting. The remaining 0.3 percent of those dialyzing were peritoneal outpatients and patients who were undergoing self-care dialysis training as of December 31. Overall, the outpatient hemodialysis population grew at a 9.3 percent annual rate.

There were 33,591 patients dialyzing at home in 1995, which was 16.8 percent of all dialysis patients. As a percent of all dialysis patients, this represents a net decrease from 1990 when there were 22,640 home patients, representing 17.4 percent of all dialysis patients. Within the home dialysis population, Continuous Ambulatory Peritoneal Dialysis (CAPD) was consistently the most frequently selected modality for dialysis. There were 21,369 patients in this group in 1995, compared to 12,222 for all other at-home modalities. However, Continuous Cycling Peritoneal Dialysis (CCPD) was the fastest growing treatment, compared to both in-unit and other home patient categories. This modality experienced the largest increase in utilization with an average annual rate of increase of 27.2 percent for years 1990-1995 and a 44.3 percent increase from 1994 to 1995. The number of patients on home hemodialysis fluctuated during these years, decreasing from 1990 to 1992 and then increasing from 1992 to 1994. However, the 2,086 home hemodialysis patients in 1995 represented a low for the 6 year period. Overall, the home patient population grew at an average annual rate of 8.2 percent.

The number of persons completing self-dialysis training is shown in Table 15. The number of patients completing home dialysis training experienced an average annual percent increase of 9.2 percent. The data in Table 15 support the finding in Table 14 that CCPD was the fastest growing treatment modality. The average annual rate of increase for CCPD was 15.9 percent including a 61.2 percent increase from 1994 to 1995. Consequently, by 1995 CCPD represented over one-third of all newly trained patients.

Transplant patients

Counts of kidney transplant patients, by Medicare and non-Medicare categories, are shown in Table 16. The average annual rate of increase for the number of transplanted patients and the number of Medicare covered transplants from 1983 through 1995 was 5.7 and 5.5 percent respectively. The average annual rate of increase for non-Medicare covered transplants was 8.3 percent. In 1995, 89.0 percent of all kidney transplants were covered by Medicare, down from 91.7 percent in 1983.

Counts of kidney transplants by donor type are shown in Table 17. The overall trends are very similar to those in Table 16. The number of kidney transplants is slightly higher than the number of transplanted patients because a few patients received more than one transplant during a calendar year. Between 1983 through 1995, the total number of transplants increased from 6,112 to 11,902, an average annual increase of 5.7 percent. Although cadaver transplants increased slightly more than the combination of living related and living non-related donor transplants, the trend in recent years has been toward more living donors. In 1990, living related donor transplants accounted for 20.4 percent of all transplants while living unrelated donor transplants accounted for 0.9 percent of all transplants. By 1995, living related and non-related transplants accounted for 25.1 percent and 3.6 percent of all transplants, respectively.

Trends in kidney transplantation by age, sex, race, and diagnostic category are shown in Table 19. As stated above, figures in Tables 16 and 19 will not be exactly comparable because the data are compiled from two different sources with different lead times for data input. However, the trends of the data in these tables are comparable. In 1989, there were 8,240 Medicare entitled persons who received a kidney transplant. By 1994, the number was 10,229, an average annual rate of increase of 4.4 percent. There has been a gradual increase in the age of transplant recipients. The average age of transplant recipients increased from 37.9 years of age in 1987 to 42.1 years of age in 1994. There was a net decline in the number of transplant recipients under 35 years of age from 3,335 in 1989 to 3,220 in 1994. All of the age groups over 35 years of age experienced an increase in the number of transplant recipients. The largest percentage increase occurred among the elderly. Persons 65 years of age and over accounted for 2.5 percent of all transplant recipients in 1989 and 5.1 percent in 1994.

Transplants among females and males have increased at the same rate (4.5 percent versus 4.4 percent average annual rate of increase, respectively). Females accounted for 39.3 percent of Medicare transplant recipients in 1989 and increased to 40.6 percent in 1992. However, for years 1993 and 1994, the percent of female transplant recipients has remained constant at 39.5 percent.

Asians and black persons had the highest average annual rates of growth in numbers of transplant recipients (10.1 percent and 6.9 percent, respectively). In 1994, 23.8 percent of Medicare kidney transplant recipients were black and 71.2 percent were white.

For Medicare transplant recipients, the average annual percent change was highest for those whose renal failure was attributed to hypertension (9.6 percent), diabetes (7.3 percent), and obstructive nephropathy (4.7 percent). In 1994, persons whose renal failure was attributed to glomerulonephritis, diabetes, and hypertension accounted for 23.0, 24.4, and 17.0 percent of all transplant recipients, respectively.

From 1985 to 1995, the number of persons (Medicare and non-Medicare) awaiting kidney transplants increased from 9,791 to 28,883, an average annual rate of increase of 11.4 percent (Table 19). In 1985, 11.5 percent of all dialysis patients were awaiting a transplant. By 1995, 14.4 percent of all dialysis patients were awaiting a transplant.

Access to transplantation

Program experience with respect to transplant access is presented in this section. This analysis covered the period from January 1, 1990 through December 31, 1994. All Medicare beneficiaries with renal failure occurring on or after January 1, 1990 through December 31, 1994 were included in these analyses (N = 276,387). In addition to ESRD PMMIS data, this section includes analyses based on matching PMMIS data with data from the Organ Procurement and Transplant Network (OPTN). The OPTN is the national registry of persons awaiting transplantation. Its primary function is to ensure the fair and equitable allocation of transplanted organs in the United States. The OPTN is operated by the United Network for Organ Sharing (UNOS) under contract to the Health Resources and Services Administration.

Data

Three measures of access to transplantation are used in this analysis. In all three cases, a time to event model, with censoring, is used.

(1) Access to transplantation. This measures the overall rate of transplantation among ESRD patients from the time of renal failure. The start date is the date of renal failure, taken from the medical evidence form (HCFA-2728). The outcome of interest is a transplant, either cadaveric or living donor. Patients are censored either at death or the end of the observation period (April 30, 1996).

(2) Access to the OPTN transplant waiting list. This is, for most persons, the intermediate step between renal failure and a cadaveric transplant. It measures one's eligibility to get a cadaver transplant. This requires linkage of HCFA and OPTN data[1]. This measure does not include access to living donor transplantation. The start date is the date of renal failure, taken from the medical evidence form. The end point is the earliest date of enrollment on the OPTN waiting list. Censoring events include death, any transplant (usually living donor) that may have occurred without first wait listing, and end of observation period (April 30, 1996).

(3) Access to transplantation after wait listing. The start date for this measure is the first date of wait listing. The end point is a cadaver transplant. Living donor transplants were used as censoring events for this measure because an LRD transplant is not the outcome for which the wait list is designed. Other censoring events included death, end of observation period (April 30, 1996), and any disenrollment from the OPTN wait list[2].

The date of transplant was obtained from the transplant files provided to HCFA from the Organ Procurement and Transplant Network (OPTN) or from the inpatient hospital bill (HCFA-UB-92).

Because there are very strong age effects on access to transplantation, the rates were age adjusted to make other demographic comparisons more meaningful. Transplant access rates for each sex, race, and primary diagnostic subgroup were age-adjusted to the age distribution for all persons in each table. For example, access to transplantation and access to the OPTN wait lists for males and females were age-adjusted to the age distribution for all incident persons. The male and female rates of access to transplantation after wait listing were age adjusted to the age distribution of all persons who were wait listed. Therefore, access differences due to age were largely eliminated.

Results

Table 20 shows the rate of transplantation for the 1990 to 1994 Medicare ESRD incident population (N = 276,387). Cumulative transplantation was 6.3 percent at one year, 15.3 percent at three years, and 19.8 percent at five years following renal failure. Access to transplantation is inversely related to age, decreasing from 44.1 percent (at one year following renal failure) for persons under age 15 to less than one percent for persons over the age of 65. Males are more likely to be transplanted than are females. At five years post renal failure, the transplantation rate among males is 21.6 percent compared to 17.7 percent among females. At one year following renal failure white persons are almost 4 times more likely to have received a transplant than are black persons (8.9 percent and 2.3 percent, respectively). Asian (5.5 percent) and American Indians (5.1 percent) also had transplantation rates more than double the rate for black persons. At five years post renal failure, almost one-fourth of white persons had received a transplant (24.2 percent), followed by Asians (22.9 percent), American Indians (16.6 percent), and blacks (12.8 percent). Transplantation rates also varied across causes of renal failure. The highest rates (at five years) were found for polycystic kidney disease (34.8 percent), glomerulonephritis (27.8 percent), and interstitial nephritis (23.9 percent). The lowest rates were found for diabetes (16.3 percent), and hypertension (17.2 percent). Part of the diagnostic difference is probably due to age; both hypertensive and diabetic ESRD patients tend to be older than the other diagnostic groups.

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[1] The OPTN contains records on all persons awaiting a transplant, not just Medicare beneficiaries. Therefore, a perfect match between the two systems is not expected. About 90 percent of records from the OPTN were successfully matched to the PMMIS. Because about 90 percent of all kidney transplants are Medicare, the match was considered to be excellent.

[2] Reasons for leaving the wait list, other than by receiving a transplant, include death, medically unsuitable, moved, refused transplant, and other

Rates of wait listing following renal failure among Medicare ESRD beneficiaries are shown in Table 21. About one-eighth (12.1 percent) of ESRD beneficiaries were wait listed within a year of renal failure. At three years 19.4 percent had been wait listed and at five years after renal failure, 21.8 percent had been wait listed. The effect of living donor transplantation is shown in the wait list rates. Although children (ages under 15) have the highest rate of transplantation (Table 20), they are less likely to be wait listed than other age group under age 45. Wait listing is extremely rare for persons over age 65. Only 4.4 percent of persons ages 65 to 74 and less than one percent of persons 75 years of age and over had been wait listed by five years after renal failure.

As with aggregate transplantation (Table 20), black ESRD beneficiaries are the least likely to get wait listed of all racial groups, 17.8 percent were wait listed by five years after renal failure. Asians were the most likely to be wait listed (28.1 percent at year five) compared to 24.0 percent among white persons. Wait listing rates by diagnosis mirror those of transplantation, again reflecting in part, age differences among causes of renal failure. Cumulative wait listing at five years were low for obstructive nephropathy (17.5 percent) and diabetes (18.7 percent). The highest five year wait listing rates were found for persons whose renal failure was attributed to polycystic kidney disease (37.5 percent) and glomerulonephritis (30.0 percent).

Transplantation rates after wait listing are shown in Table 22. This table differs from the previous two in that the cohort consists of Medicare beneficiaries entering the OPTN wait lists during the 1990 to 1994 period. It includes some persons whose renal failure occurred prior to 1990.

Between 1990 and 1994, there were 48,401 Medicare beneficiaries who were wait listed on the OPTN national registry (Table 22). Over one-third (37.8 percent) of these persons received a transplant within one year of wait listing, increasing to 68.9 percent at three years after being added to the list. By the end of five years, over three-fourths (77.2 percent) of persons who did not die or otherwise leave the waiting list had received at least one cadaver transplant. Transplantation after wait listing decreased slightly with age. At five years 91.0 percent of persons ages under age 15 at the time of wait listing had received a transplant. The lowest transplant rates were found for persons ages 65 to 74 (66.2 percent) and persons 75 years of age and over (61.0 percent). Males had slightly higher five year transplant rates than did females (78.9 percent and 74.5 percent, respectively).

The highest initial rate of transplantation was experienced by white beneficiaries; 43.4 percent were transplanted within one year of wait listing. This was followed by Asian beneficiaries (30.2 percent), American Indians (29.5 percent), and black persons (26.7 percent). By the end of five years, cumulative transplantation rates ranged from 68.7 percent among blacks to [illegible]4 percent among white beneficiaries. By diagnostic category, one year transplantation rates ranged from a high of 45.5 percent for polycystic kidney disease to a low of 33.2 percent of persons whose renal failure was attributed to hypertension. At five years, transplantation rates were still highest for those whose primary diagnosis was attributed to polycystic kidney disease (83.9 percent) and lowest for those with hypertension (75.1 percent) and diabetes (75.6 percent).

Table 13
Dialysis patients, by Medicare coverage: 1983-95

	Total		Medicare		Non-Medicare	
Year	Number	Percent change	Number	Percent change	Number	Percent change
1983	71,987	—	67,569	—	4,419	—
1984	78,483	9.0	73,485	8.8	4,998	13.1
1985	84,797	8.0	79,134	7.7	5,663	13.3
1986	90,886	7.2	84,815	7.2	6,071	7.2
1987	98,432	8.3	91,361	7.7	7,071	16.5
1988	105,958	7.7	98,191	7.5	7,767	9.8
1989	116,169	9.6	107,447	9.4	8,722	12.3
1990	129,800	11.7	120,218	11.9	9,582	9.9
1991	142,488	9.8	132,251	10.0	10,237	6.8
1992	157,354	10.4	145,399	9.9	11,955	16.8
1993	171,479	9.0	158,658	9.1	12,821	7.2
1994	186,822	8.9	172,498	8.7	14,324	11.7
1995	200,162	7.1	183,585	6.4	16,577	15.7
			Average annual percent change			
1983-1995	—	8.9	—	8.7	—	11.6

SOURCE: Health Care Financing Administration, Bureau of Data Management & Strategy: Data from the End Stage Renal Facility Survey, 1983-95.

Table 14
End stage renal disease dialysis population, by type and place of dialysis: 1990-1995

Type and place of dialysis	1990	1991	1992	1993	1994	1995	Average annual percent change	Percent change 1994-95
				Number of patients				
Total	129,800	142,488	157,354	171,479	186,822	200,162	9.0	7.1
Outpatient hemodialysis	106,432	116,819	128,458	140,059	153,190	166,173	9.3	8.5
Outpatient peritoneal	273	234	193	141	145	90	-19.9	-37.9
Home hemodialysis	2,483	2,266	2,161	2,256	2,328	2,086	-3.4	-10.4
Home peritoneal	190	173	205	164	181	137	-6.3	-24.3
CAPD	16,969	18,881	20,872	22,573	23,708	21,369	4.7	-9.9
CCPD	2,998	3,797	4,914	5,806	6,931	9,999	27.2	44.3
Self training	455	442	551	704	484	398	-2.6	-17.8

NOTE: Average annual percent change calculated by use of compounding.

SOURCE: Health Care Financing Administration, Bureau of Data Management & Strategy: Data from the End Stage Renal Disease Facility Survey, 1983-95.

Table 15

Dialysis patients completing training, by type of dialysis: 1990-1995

Type of dialysis	1990	1991	1992	1993	1994	1995	Average annual percent change	Percent change 1994-95
	Number of patients							
Total completed dialysis training	13,096	15,252	16,618	17,998	19,311	20,381	9.2	5.5
Hemodialysis	976	681	854	651	587	524	-11.7	-10.7
Peritoneal	166	138	99	77	137	114	- 7.2	-16.8
CAPD	9,843	11,753	12,.271	13,428	14,179	12,536	5.0	-11.6
CCPD	2,111	2,680	3,394	3,842	4,408	7,207	15.9	61.2

NOTE: Average annual percent change calculated by use of compounding.

SOURCE: Health Care Financing Administration, Bureau of Data Management & Strategy: Data from the End Stage Renal Disease Facility Survey, 1990-95.

Table 16

Kidney transplant patients, by Medicare coverage: 1983-95

	Total		Medicare		Non-Medicare	
Year	Number	Percent change	Number	Percent change	Number	Percent change
1983	6,098	—	5,591	—	507	—
1984	6,933	13.7	6,304	12.8	629	24.1
1985	7,676	10.7	7,073	12.2	603	-4.1
1986	8,948	16.6	8,258	16.8	690	14.1
1987	8,949	0.0	8,298	0.5	651	-5.7
1988	8,909	-0.4	8,175	-1.5	734	12.7
1989	8,885	-0.3	8,111	0.8	774	5.4
1990	9,779	10.1	8,973	10.6	806	4.1
1991	10,011	2.4	9,197	2.5	814	1.0
1992	10,101	0.9	9,093	1.1	1,008	23.8
1993	10,910	8.0	9,836	8.2	1,074	6.5
1994	11,296	3.5	10,246	4.2	1,050	9.8
1995	11,885	5.2	10,572	3.2	1,313	25.1
	Average annual percent change					
1983-95	—	5.7	—	5.5	—	8.3

NOTE: Average annual percent change calculated by use of compounding.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the End Stage Renal Disease Facility Survey, 1983-95.

Table 17
Kidney transplants, by donor type: 1983-95

	Total		Cadaver		Living-Related		Living-Unrelated	
Year	Number	Percent Change	Number	Percent change	Number	Percent change	Number	Percent change
1983	6,112	—	4,328	—	1,784	—	—	—
1984	6,968	14.0	5,264	21.6	1,704	-4.5	—	—
1985	7,695	10.4	5,819	10.5	1,876	10.1	—	—
1986	8,976	16.0	7,089	21.8	1,887	0.6	—	—
1987	8,967	-0.1	7,060	-0.4	1,907	1.1	—	—
1988	8,932	-0.4	7,116	-0.8	1,760	-7.7	56	—
1989	8,899	-0.4	7,006	-1.5	1,823	3.6	70	25.0
1990	9,796	10.1	7,705	10.0	2,00[illegible]	9.8	90	28.6
1991	10,026	2.3	7,644	-0.8	2,296	14.7	86	-4.4
1992	10,115	0.9	7,579	-0.9	2,391	4.1	145	68.6
1993	10,934	8.0	8,106	7.0	2,631	10.0	197	35.9
1994	11,312	3.5	8,312	2.5	2,738	4.1	262	38.0
1995	11,902	5.2	8,486	2.1	2,992	9.3	424	61.8
			Average annual percent change					
1983-95	—	5.7	—	5.8	—	4.4	—	33.5

NOTE: All calculations are based on unrounded numbers. Average annual percent increase calculated by use of compounding.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the End Stage Renal Disease Facility Survey, 1983-95.

Table 18
Patients awaiting transplants: 1985-95

Year	Number of patients	Percent increase	Percent of dialysis
1985	9,791	14.4	11.5
1986	11,108	13.5	12.2
1987	12,140	9.3	12.3
1988	13,282	9.4	12.5
1989	14,687	10.6	12.6
1990	17,556	19.5	13.5
1991	18,234	3.9	12.8
1992	21,618	18.6	13.7
1993	22,974	6.3	13.4
1994	26,595	15.8	14.2
1995	28,883	8.6	14.4
		Average annual percent increase	
1985-95	—	11.4	—

NOTE: Average annual percent increase calculated by use of compounding.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the End Stage Renal Disease Facility Survey 1985-95.

Table 19
Medicare end stage renal disease program transplants, by age, sex, race, and primary diagnosis: 1989-94

Age, sex, race and primary diagnosis	1989	1990	1991	1992	1993	1994	Percent 1994	Average annual percent change	Percent change 1993-94
Total	8,240	9,053	9,337	9,417	9,964	10,229	100.0	4.4	2.7
Age									
Under 15 years	346	332	381	340	347	319	3.1	-1.6	-8.1
15-24 years	852	903	876	828	848	889	8.7	0.9	4.8
25-34 years	1,944	2,073	2,078	2,012	2,081	2,012	19.7	0.7	-3.3
35-44 years	2,211	2,407	2,483	2,477	2,536	2,595	25.4	3.3	2.3
45-54 years	1,643	1,860	1,909	2,021	2,251	2,352	23.0	7.4	4.5
55-64 years	1,041	1,187	1,276	1,322	1,463	1,542	15.1	8.2	5.4
65-74 years	[illegible]	279	329	400	423	499	4.9	20.6	18.0
75 years or over	7	12	5	17	15	21	0.2	24.6	40.0
Sex									
Male	5,001	5,453	5,611	5,586	6,032	6,191	60.5	4.4	2.6
Female	3,239	3,600	3,726	3,831	3,932	4,038	39.5	4.5	2.7
Race									
Asian	187	233	236	277	267	303	3.0	10.1	13.5
Black	1,674	1,858	1,924	1,962	2,092	2,333	22.8	6.9	11.5
White	6,228	6,810	6,998	7,011	7,431	7,288	71.2	3.2	-1.9
American Indian	98	93	108	106	101	125	1.2	5.0	23.8
Other/unknown	53	59	71	61	73	180	1.8	27.7	146.6
Primary diagnosis									
Diabetes	1,753	1,916	2,111	2,107	2,453	2,493	24.4	7.3	1.6
Glomerulonephritis	2,186	2,416	2,389	2,337	2,287	2,356	23.0	1.5	3.0
Hypertension	1,096	1,293	1,332	1,482	1,590	1,737	17.0	9.6	9.2
Cystic kidney disease	578	684	673	734	758	654	6.4	2.5	-13.7
Interstitial nephritis	352	374	410	386	429	367	3.6	0.8	-14.5
Obstructive nephropathy	178	199	201	218	236	224	2.2	4.7	-5.1
Other	731	787	798	877	895	961	9.4	5.6	7.4
Unknown	612	662	667	657	691	692	6.8	2.5	0.1
Not Reported	754	722	756	619	625	745	7.3	-0.2	19.2

NOTE: All calculations are based on unrounded numbers. Average annual percent increase calculated by use of compounding.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, September 1996 update, 1989-94.

Table 20

Access to transplantation, by age, sex, race, and primary diagnosis: 1990-94

Age, sex, race and primary diagnosis	Total	Percent transplanted									
		1 year		2 years		3 years		4 years		5 years	
Total	276,387	6.3	(0.1)	11.5	(0.1)	15.3	(0.1)	18.1	(0.1)	19.8	(0.1)
Age											
Under 15 years	2,226	44.1	(1.1)	64.4	(1.1)	74.2	(1.1)	79.9	(1.1)	82.7	(1.1)
15-24 years	6,515	29.4	(0.6)	46.6	(0.6)	57.4	(0.7)	64.5	(0.7)	68.9	(0.8)
25-34 years	17,706	23.3	(0.3)	38.1	(0.4)	47.8	(0.4)	54.9	(0.5)	58.6	(0.5)
35-44 years	28,501	16.0	(0.2)	28.3	(0.3)	37.4	(0.3)	43.5	(0.4)	47.6	(0.4)
45-54 years	37,532	8.8	(0.2)	17.8	(0.2)	24.5	(0.3)	29.7	(0.3)	32.9	(0.4)
55-64 years	56,230	3.5	(0.1)	7.9	(0.1)	11.8	(0.2)	14.7	(0.2)	16.2	(0.3)
65-74 years	77,848	0.7	(0.0)	1.7	(0.1)	2.5	(0.1)	3.1	(0.1)	3.5	(0.1)
75 years or over	49,829	0.1	(0.0)	0.1	(0.0)	0.2	(0.0)	0.3	(0.1)	0.4	(0.1)
Sex											
Male	148,401	6.6	(0.1)	12.4	(0.1)	16.8	(0.1)	19.8	(0.2)	21.6	(0.2)
Female	127,986	6.0	(0.1)	10.4	(0.1)	13.7	(0.1)	16.2	(0.2)	17.7	(0.2)
Race											
Asian	6,188	5.5	(0.3)	11.3	(0.5)	16.0	(0.6)	19.6	(0.8)	22.9	(1.1)
Black	79,620	2.3	(0.1)	5.4	(0.1)	8.4	(0.1)	10.9	(0.2)	12.8	(0.2)
White	182,229	8.9	(0.1)	15.4	(0.1)	19.8	(0.1)	22.7	(0.2)	24.2	(0.2)
American Indian	3,312	5.1	(0.4)	9.4	(0.6)	12.6	(0.8)	14.8	(1.0)	16.6	(1.3)
Other/Unknown	5,038	2.7	(0.3)	6.0	(0.5)	9.1	(0.7)	11.5	(1.0)	14.3	(1.3)
Primary diagnosis											
Diabetes	99,501	5.5	(0.1)	10.1	(0.1)	13.3	(0.1)	15.1	(0.2)	16.3	(0.2)
Glomerulonephritis	31,070	9.0	(0.2)	16.5	(0.3)	21.8	(0.3)	25.7	(0.4)	27.8	(0.4)
Hypertension	78,924	3.9	(0.1)	8.6	(0.1)	12.4	(0.2)	15.2	(0.2)	17.2	(0.3)
Polycystic Kidney Disease	6,758	14.5	(0.5)	24.1	(0.6)	29.6	(0.7)	33.0	(0.7)	34.8	(0.8)
Interstitial Nephritis	7,475	9.1	(0.4)	15.5	(0.5)	19.7	(0.6)	22.4	(0.7)	23.9	(0.9)
Obstructive Nephropathy	4,957	6.7	(0.4)	11.5	(0.6)	15.0	(0.7)	16.7	(0.8)	18.9	(1.0)
Other	18,637	5.1	(0.2)	10.1	(0.3)	14.3	(0.4)	17.2	(0.5)	18.8	(0.7)
Unknown	13,303	7.7	(0.3)	13.8	(0.4)	17.8	(0.5)	20.8	(0.6)	22.9	(0.7)
Not Reported	15,762	7.9	(0.3)	11.7	(0.3)	15.2	(0.4)	17.7	(0.5)	19.4	(0.6)

* Less than 0.1 percent

NOTE: All calculations are based on unrounded numbers. Average annual percent increase calculated by use of compounding.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, September 1996 update, 1990-1994.

Table 21
Access to the OPTN wait list by age, sex, race, & primary diagnosis: 1990-94

Age, sex, race and primary diagnosis	Total	Percent Wait Listed									
		1 year		2 years		3 years		4 years		5 years	
Total	276,387	12.1	(0.1)	17.0	(0.1)	19.4	(0.1)	20.9	(0.1)	21.8	(0.1)
Age											
Under 15 years	2,226	27.4	(1.0)	37.2	(1.1)	41.3	(1.1)	43.9	(1.2)	45.9	(1.3)
15-24 years	6,515	36.7	(0.6)	48.5	(0.6)	53.5	(0.7)	57.5	(0.7)	59.9	(0.7)
25-34 years	17,706	35.9	(0.4)	47.1	(0.4)	51.9	(0.4)	55.0	(0.4)	57.2	(0.5)
35-44 years	28,501	31.1	(0.3)	41.7	(0.3)	46.7	(0.3)	49.9	(0.4)	52.3	(0.4)
45-54 years	37,532	22.1	(0.2)	31.3	(0.3)	35.9	(0.3)	38.8	(0.3)	40.5	(0.4)
55-64 years	56,230	9.5	(0.1)	15.1	(0.2)	18.0	(0.2)	19.6	(0.2)	20.6	(0.2)
65-74 years	77,848	0.7	(0.1)	3.2	(0.1)	3.8	(0.1)	4.1	(0.1)	4.4	(0.1)
75 years or over	49,829	0.1	*	0.2	*	0.3	*	0.3	*	0.3	*
Sex											
Male	148,401	13.1	(0.1)	18.5	(0.1)	21.1	(0.1)	22.7	(0.2)	23.6	(0.2)
Female	127,986	10.9	(0.1)	15.4	(0.1)	17.5	(0.1)	18.9	(0.2)	19.9	(0.2)
Race											
Asian	6,188	16.7	(0.5)	22.6	(0.6)	25.2	(0.7)	27.0	(0.8)	28.1	(0.9)
Black	79,620	7.9	(0.1)	12.5	(0.1)	15.0	(0.2)	16.7	(0.2)	17.8	(0.2)
White	182,229	14.5	(0.1)	19.6	(0.1)	21.8	(0.1)	23.1	(0.1)	24.0	(0.2)
American Indian	3,312	10.6	(0.6)	15.8	(0.8)	18.0	(0.9)	20.0	(1.0)	20.8	(1.1)
Other/Unknown	5,038	10.7	(0.5)	16.1	(0.7)	18.9	(0.8)	21.1	(1.0)	21.5	(1.1)
Primary diagnosis											
Diabetes	99,501	10.3	(0.1)	14.6	(0.1)	16.8	(0.2)	18.0	(0.2)	18.7	(0.2)
Glomerulonephritis	31,070	17.8	(0.2)	24.4	(0.3)	27.1	(0.3)	28.9	(0.3)	30.0	(0.4)
Hypertension	78,924	10.4	(0.1)	15.6	(0.1)	18.2	(0.2)	20.0	(0.2)	21.1	(0.2)
Polycystic Kidney Disease	6,758	26.3	(0.6)	32.5	(0.6)	34.7	(0.7)	36.4	(0.7)	37.5	(0.7)
Interstitial Nephritis	7,475	14.9	(0.4)	20.0	(0.5)	22.4	(0.6)	23.6	(0.6)	25.0	(0.8)
Obstructive Nephropathy	4,957	10.2	(0.5)	13.9	(0.6)	15.6	(0.6)	16.5	(0.7)	17.5	(0.8)
Other	18,637	10.3	(0.3)	15.4	(0.4)	18.4	(0.4)	20.0	(0.5)	21.4	(0.6)
Unknown	13,303	14.3	(0.3)	19.6	(0.4)	22.1	(0.5)	23.4	(0.5)	24.1	(0.6)
Not Reported	15,762	12.1	(0.3)	16.7	(0.4)	18.9	(0.4)	19.8	(0.5)	20.8	(0.6)

* Less than 1 percent

SOURCES: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, September 1996 update, 1989-94, and the Organ Procurement and Transplant Network.

Table 22

Transplantation after OPTN wait list by age, sex, race, & primary diagnosis: 1990-94

Percent Wait Listed

Age, sex, race and primary diagnosis	Total	1 year		2 years		3 years		4 years		5 years	
Total	48,401	37.8	(0.2)	57.7	(0.2)	68.9	(0.3)	74.7	(0.3)	77.2	(0.3)
Age											
Under 15 years	809	54.0	(1.8)	77.1	(1.7)	87.1	(1.5)	90.0	(1.4)	91.0	(1.4)
15-24 years	3,198	39.7	(0.9)	62.7	(0.9)	75.1	(0.9)	80.7	(1.0)	83.2	(1.0)
25-34 years	8,839	41.2	(0.5)	61.3	(0.6)	71.8	(0.6)	77.6	(0.6)	80.6	(0.7)
35-44 years	12,377	38.6	(0.4)	58.7	(0.5)	70.2	(0.5)	76.5	(0.5)	79.2	(0.6)
45-54 years	12,071	35.2	(0.4)	54.8	(0.5)	66.7	(0.5)	72.6	(0.6)	74.8	(0.6)
55-64 years	8,543	34.9	(0.5)	54.2	(0.6)	65.4	(0.6)	71.4	(0.7)	73.8	(0.8)
65-74 years	2,486	36.2	(1.0)	53.1	(1.1)	61.9	(1.2)	64.8	(1.3)	66.2	(1.5)
75 years or over	78	32.4	(5.4)	51.2	(6.2)	61.0	(7.1)	61.0	(7.1)	61.0	(7.1)
Sex											
Male	29,409	39.0	(0.3)	59.6	(0.3)	71.0	(0.3)	76.9	(0.4)	78.9	(0.4)
Female	18,992	35.8	(0.4)	54.7	(0.4)	65.7	(0.4)	71.4	(0.5)	74.5	(0.5)
Race											
Asian	1,564	30.2	(1.2)	51.4	(1.4)	65.2	(1.5)	74.0	(1.6)	78.1	(1.8)
Black	13,064	26.7	(0.4)	45.3	(0.5)	58.3	(0.5)	65.1	(0.6)	68.7	(0.6)
White	32,243	43.4	(0.3)	64.1	(0.3)	74.5	(0.3)	79.5	(0.3)	81.4	(0.4)
American Indian	575	29.5	(1.9)	50.8	(2.3)	66.7	(2.6)	74.7	(2.9)	75.8	(3.0)
Other/unknown	955	17.5	(1.3)	30.8	(1.7)	39.8	(2.0)	47.2	(2.3)	53.3	(2.9)
Primary diagnosis											
Diabetes	13,418	40.9	(0.4)	59.2	(0.5)	69.3	(0.5)	74.0	(0.6)	75.6	(0.6)
Glomerulonephritis	10,333	38.3	(0.5)	58.7	(0.5)	71.0	(0.5)	76.8	(0.6)	79.8	(0.6)
Hypertension	9,175	33.2	(0.5)	53.4	(0.6)	65.5	(0.6)	72.2	(0.7)	75.1	(0.7)
Polycystic kidney disease	3,333	45.5	(0.9)	66.7	(0.9)	77.5	(0.8)	82.0	(0.9)	83.9	(0.9)
Interstitial nephritis	1,625	39.7	(1.3)	58.5	(1.3)	70.3	(1.4)	76.1	(1.4)	78.1	(1.5)
Obstructive nephropathy	712	38.6	(1.9)	60.6	(2.0)	71.8	(2.0)	79.1	(2.0)	81.2	(2.2)
Other	3,721	33.5	(0.8)	53.5	(0.9)	65.2	(1.0)	71.1	(1.0)	75.4	(1.2)
Unknown	2,761	40.3	(1.0)	59.7	(1.0)	71.1	(1.0)	77.4	(1.1)	79.1	(1.2)
Not Reported	3,323	33.5	(0.8)	51.8	(0.9)	61.3	(1.0)	67.7	(1.1)	69.8	(1.2)

* Less than 1 percent

SOURCES: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, September 1996 update, 1989-94, and the Organ Procurement and Transplant Network.

End stage renal disease facility data and patient counts

The information presented in Tables 23 through 38 was collected through the use of the ESRD Facility Survey, Form HCFA-2744, and covers the period of January 1, 1995 through December 31, 1995. The rate of compliance of surveyed facilities in completing the ESRD Facility Survey was 100 percent for 1995. It is important to note that the number of facilities surveyed and reporting, as summarized in Tables 23 through 36, does not equal the total number of Medicare-approved providers of renal care as reported in Tables 57, 58, and 59. Some Medicare-approved hospitals were not surveyed because they provide acute dialysis only or they serve as a backup to a chronic dialysis facility, i.e., they do not provide routine maintenance dialysis for ESRD patients, Other Medicare-approved renal providers were not requested to complete an ESRD Facility Survey because they were so recently certified that there was insufficient time to include them in the survey population.

It must also be noted that this section includes only Medicare-approved renal providers and, thus, this section does not reflect all renal dialysis facilities in the country. There are a number of facilities providing chronic dialysis services (such as several Department of Veterans Affairs and Department of Defense facilities), that are not Medicare-approved and are not included in Tables 23 to 38. A brief summary of the number of patients receiving dialysis services from Department of Veterans Affairs facilities is provided in Table 39. Therefore, due to slight differences in reporting facilities and some imprecision in determining Medicare dialysis status, the survey data will not agree with the PMMIS enrollment data shown in Tables 6 through 12.

The survey tables (Tables 23 through 37) are arrayed either nationally or by State. Tables 26 through 29 and Tables 37 and 38 provide aggregate dialysis patient population figures as of December 31, 1995 (end of the survey period). The other tables reflect activity for the entire survey period, unless otherwise noted.

Tables 24, 25, 32, and 34 display patients by Medicare status: Currently enrolled in Medicare, Medicare application pending, and non-Medicare. Patients appearing in the non-Medicare category may include those who are covered by the Department of Veterans Affairs, those who are covered by private insurance, those who are covered by Medicaid, and foreign nationals. Tables 37 and 38 display the dialysis patient population by type of facilities, independent and hospital, respectively, as well as profit and nonprofit facilities.

In the 1995 facility survey we found that, as of December 31, 1995, 86.1 percent of all ESRD patients were entitled to Medicare benefits; 5.7 percent had applications for Medicare entitlement pending; and 8.3 percent were not eligible for Medicare. (See Tables 24 and 25.) Of the 200,162 dialysis patients reported from the facility survey, 126,673 (63.3 percent) were dialyzing at independent, for-profit dialysis facilities. (See Table 37.) From 1983 through 1995, the number of patients dialyzing at independent facilities experienced an average annual percent change of 11.3 percent for outpatients and 13.0 percent for home patients, compared to 4.6 percent for outpatients and 2.4 percent for home patients dialyzing under the care of hospital facilities. (See Table 38.)

The Omnibus Reconciliation Act of 1989 implemented regulations requiring that suppliers of home dialysis equipment and services must enter into agreements with Medicare-approved dialysis facilities who will provide support services to home dialysis patients not under the direct care of a Medicare-approved dialysis facility (Method II patients). Beginning with the 1993 facility survey process, these facilities were instructed to include, as their regular dialysis population, Method II home patients for whom they have a signed agreement to provide backup/support services. The Method II patients were previously unaccounted for in past survey processes, but are now included in the home dialysis count.

Table 23

End stage renal disease facilities surveyed, by State: 1995

State	Dialysis facilities surveyed	Transplant facilities surveyed
TOTAL	2,810	237
Alabama	66	2
Alaska	2	0
Arizona	62	4
Arkansas	41	3
California	282	24
Colorado	20	4
Connecticut	23	2
Delaware	8	1
District of Columbia	23	5
Florida	185	7
Georgia	113	4
Hawaii	14	1
Idaho	6	0
Illinois	104	8
Indiana	46	2
Iowa	21	3
Kansas	24	2
Kentucky	34	3
Louisiana	80	8
Maine	6	1
Maryland	71	4
Massachusetts	53	10
Michigan	79	9
Minnesota	53	4
Mississippi	48	1
Missouri	61	11
Montana	12	0
Nebraska	15	3
Nevada	5	2
New Hampshire	6	1
New Jersey	63	3
New Mexico	23	2
New York	141	15
North Carolina	88	5
North Dakota	11	3
Ohio	86	11
Oklahoma	49	7
Oregon	31	1
Pennsylvania	138	13
Puerto Rico	28	1
Rhode Island	10	0
South Carolina	56	1
South Dakota	13	1
Tennessee	72	8
Texas	218	18
Utah	15	2
Vermont	2	1
Virgin Islands	2	0
Virginia	94	6
Washington	30	5
West Virginia	18	2
Wisconsin	50	3
Wyoming	5	0
American Samoa	1	0
Guam	2	0
Mariana Islands	1	0

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the End Stage Renal Disease Facility Survey, 1995.

Table 24
Dialysis patient eligibility status, by State: 1995

State	Facilities Reporting	Total Dialysis Patients	Currently Enrolled in Medicare	Medicare Application Pending	Non-Medicare
TOTAL	2,810	200,162	172,261	11,324	16,577
Alabama	66	4,110	3,595	169	346
Alaska	2	134	124	7	3
Arizona	62	3,350	2,552	192	606
Arkansas	41	1,771	1,584	140	47
California	282	22,729	17,751	1,434	3,544
Colorado	20	1,721	1,478	89	154
Connecticut	23	2,288	2,031	96	161
Delaware	8	647	543	47	57
District of Columbia	23	1,474	1,143	115	216
Florida	185	11,274	10,131	714	429
Georgia	113	7,157	6,564	305	288
Hawaii	14	1,247	1,064	130	53
Idaho	6	361	334	13	14
Illinois	104	8,912	7,379	375	1,158
Indiana	46	4,071	3,604	288	179
Iowa	21	1,284	1,176	81	27
Kansas	24	1,356	1,204	120	32
Kentucky	34	2,179	1,899	154	126
Louisiana	80	4,746	4,217	309	220
Maine	6	517	447	35	35
Maryland	71	4,544	3,841	266	437
Massachusetts	53	3,877	3,248	166	463
Michigan	79	6,982	5,996	540	446
Minnesota	53	2,198	1,918	104	176
Mississippi	48	3,019	2,723	101	195
Missouri	61	3,872	3,614	185	73
Montana	12	396	348	24	24
Nebraska	15	898	847	45	6
Nevada	5	777	664	56	57
New Hampshire	6	457	442	5	30
New Jersey	63	6,837	5,901	400	536
New Mexico	23	1,319	1,080	54	185
New York	141	15,359	12,519	763	2,077
North Carolina	88	6,790	6,259	368	163
North Dakota	11	370	349	6	15
Ohio	86	7,586	6,433	682	471
Oklahoma	49	1,925	1,695	189	41
Oregon	31	1,583	1,464	88	31
Pennsylvania	138	9,633	8,199	616	818
Puerto Rico	28	2,657	2,376	95	186
Rhode Island	10	750	661	49	40
South Carolina	56	3,901	3,587	168	146
South Dakota	13	449	394	43	12
Tennessee	72	4,443	4,062	187	194
Texas	218	15,082	13,228	596	1,258
Utah	15	620	541	38	41
Vermont	2	153	136	7	10
Virgin Islands	2	75	65	5	5
Virginia	94	5,593	4,926	259	408
Washington	30	2,685	2,384	196	105
West Virginia	18	1,080	953	65	62
Wisconsin	50	2,590	2,350	109	131
Wyoming	5	97	91	4	2
American Samoa	1	44	25	1	18
Guam	2	153	109	29	15
Mariana Islands	1	40	33	2	5

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the End Stage Renal Disease Facility Survey, 1995.

Table 25
Dialysis patient counts national summary, by place of dialysis: 1995

Patient count	Total	Percent	Place of dialysis			
			Outpatient	Percent	Home	Percent
Dialysis patients beginning survey	186,449	—	153,558	82.3	33,091	17.7
Additions	115,940	—	98,095	84.6	17,845	15.4
New starts	69,148	59.6	59,077	60.2	10,071	56.4
Restarted	1,217	1.0	1,054	1.1	163	0.9
Transferred in	42,546	36.7	35,407	36.1	7,139	40.0
Returned after transplant	3,029	2.6	2,557	2.6	472	2.6
Losses	102,427		84,335	82.3	18,092	17.7
Deaths	44,908	43.8	37,467	44.4	7,441	41.1
Recovered functions	2,750	2.7	2,409	2.9	341	1.9
Transplanted	10,351	10.1	7,401	8.8	2,950	16.3
Transplanted out	41,620	40.6	34,607	41.0	7,013	38.8
Discontinued dialysis	2,406	2.3	2,115	2.5	291	1.6
Others (LTFU)	392	0.4	336	0.4	56	0.3
Number needed to balance	0	—	-747	—	747	—
Dialysis Patients						
End of survey	200,162	—	166,571	83.2	33,591	16.8
HEMO	168,259	84.1	166,173	99.8	2,086	6.2
IPD	227	0.1	90	0.1	137	0.4
CAPD	21,563	10.8	194*	0.1	21.369	63.6
CCPD	10,113	5.1	114*	0.1	9,999	29.8
Medicare status	200,162	—	—	—	—	—
Medicare	172,261	86.1	—	—	—	—
Medicare pending	11,324	5.7	—	—	—	—
Non-Medicare	16,577	8.3	—	—	—	—

* Represents self dialysis training patients

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the End Stage Renal Disease Facility Survey, 1995.

Table 26

Patients receiving care in the outpatient setting, by State: 1995

State	Facilities reporting	Total outpatients	Outpatient dialysis Hemo	Outpatient dialysis IPD	Self-dialysis training Hemo	Self-dialysis training IPD	Self-dialysis training CAPD	Self-dialysis training CCPD
TOTAL	2,810	166,571	166,109	88	0	0	0	[illegible]
Alabama	66	3,503	3,494	0	0	0	3	[illegible]
Alaska	2	100	100	0	0	0	0	0
Arizona	62	2,859	2,856	0	0	0	3	0
Arkansas	41	1,464	1,459	0	0	0	5	0
California	282	19,266	18,228	3	4	0	24	7
Colorado	20	1,369	1,366	0	1	0	2	0
Connecticut	23	1,662	1,648	1	0	0	8	5
Delaware	8	506	506	0	0	0	0	0
District of Columbia	23	1,342	1,342	0	0	0	0	0
Florida	185	9,800	9,772	1	1	0	16	10
Georgia	113	6,191	6,191	0	0	0	0	0
Hawaii	14	1,147	1,147	0	0	0	0	0
Idaho	6	246	246	0	0	0	0	0
Illinois	104	7,422	7,411	1	0	0	5	0
Indiana	46	3,052	3,034	0	0	0	17	0
Iowa	21	997	990	0	4	0	2	1
Kansas	24	1,051	1,050	0	0	0	1	0
Kentucky	34	1,774	1,769	0	0	0	4	1
Louisiana	80	4,166	4,166	0	0	0	2	1
Maine	6	423	423	0	0	0	0	0
Maryland	71	3,758	3,751	2	4	0	1	0
Massachusetts	53	3,235	3,230	0	0	0	3	2
Michigan	79	5,391	5,388	3	0	0	0	0
Minnesota	53	1,953	1,953	0	0	0	0	0
Mississippi	48	2,714	2,711	0	0	0	2	1
Missouri	61	3,031	3,024	1	0	0	4	2
Montana	12	314	314	0	0	0	0	0
Nebraska	15	575	557	0	0	0	17	1
Nevada	5	646	645	0	0	0	0	1
New Hampshire	6	314	312	0	0	0	1	1
New Jersey	63	5,546	5,522	6	8	0	5	5
New Mexico	23	1,043	1,040	0	0	0	2	1
New York	141	12,828	12,754	39	18	1	9	7
North Carolina	88	5,514	5,513	0	0	0	0	1
North Dakota	11	295	295	0	0	0	0	0
Ohio	86	5,892	5,877	2	0	0	10	3
Oklahoma	49	1,622	1,621	1	0	0	0	0
Oregon	31	1,114	1,140	0	3	0	0	1
Pennsylvania	138	8,233	8,220	1	8	0	3	1
Puerto Rico	28	2,075	2,051	14	0	0	3	7
Rhode Island	10	661	660	0	0	1	0	0
South Carolina	56	3,339	3.339	0	0	0	0	0
South Dakota	13	383	383	0	0	0	0	0
Tennessee	72	3,811	3,800	3	0	0	5	3
Texas	218	13,318	13,241	5	8	1	24	39
Utah	15	510	509	0	0	0	0	1
Vermont	2	114	114	0	0	0	0	0
Virgin Islands	2	75	75	0	0	0	0	0
Virginia	94	4,736	4,729	5	0	0	2	0
Washington	30	2,053	2,043	0	4	0	5	1
West Virginia	18	820	815	0	1	0	0	4
Wisconsin	50	2,001	2,001	0	0	0	0	0
Wyoming	5	87	87	0	0	0	0	0
American Samoa	1	44	44	0	0	0	0	0
Guam	2	116	116	0	0	0	0	0
Mariana Islands	1	40	40	0	0	0	0	0

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the End Stage Renal Disease Facility Survey, 1995.

Table 27
Patients receiving care at home, by State: 1995

State	Facilities reporting	Total home patients	HEMO	IPD	CAPD	CCPD
TOTAL	2,810	33,591	2,086	137	21,369	9,999
Alabama	66	607	19	0	416	172
Alaska	2	34	1	0	28	5
Arizona	62	491	41	0	214	236
Arkansas	41	307	9	0	223	75
California	282	3,463	50	2	2,081	1,330
Colorado	20	352	35	0	169	148
Connecticut	23	626	2	0	388	236
Delaware	8	141	1	0	118	22
District of Columbia	23	132	3	0	99	30
Florida	185	1,474	191	0	833	450
Georgia	113	966	42	17	662	245
Hawaii	14	100	3	0	88	9
Idaho	6	115	5	0	68	42
Illinois	104	1,490	134	0	897	459
Indiana	46	1,019	34	0	761	224
Iowa	21	287	50	0	173	64
Kansas	24	305	13	0	228	64
Kentucky	34	405	8	17	244	136
Louisiana	80	580	16	0	355	209
Maine	6	94	5	0	52	37
Maryland	71	786	88	0	482	216
Massachusetts	53	642	69	0	331	242
Michigan	79	1,591	83	4	1,322	182
Minnesota	53	245	15	0	180	50
Mississippi	48	305	88	0	183	34
Missouri	61	841	81	0	487	273
Montana	12	82	4	0	62	16
Nebraska	15	323	3	0	261	59
Nevada	5	131	9	0	93	29
New Hampshire	6	143	3	0	83	57
New Jersey	63	1,291	86	3	739	463
New Mexico	23	276	4	0	184	88
New York	141	2,531	139	2	1,683	707
North Carolina	88	1,276	30	7	849	390
North Dakota	11	75	2	0	55	18
Ohio	86	1,694	72	0	1,117	505
Oklahoma	49	303	6	4	232	61
Oregon	31	439	58	0	252	129
Pennsylvania	138	1,400	85	1	846	468
Puerto Rico	28	582	13	0	406	163
Rhode Island	10	89	1	0	54	34
South Carolina	56	562	15	0	341	206
South Dakota	13	66	0	0	44	22
Tennessee	72	632	61	55	365	151
Texas	218	1,764	48	7	1,039	670
Utah	15	110	10	0	74	26
Vermont	2	39	9	0	29	1
Virgin Islands	2	0	0	0	0	0
Virginia	94	857	67	0	577	213
Washington	30	632	245	15	276	96
West Virginia	18	260	8	0	186	66
Wisconsin	50	589	22	3	398	166
Wyoming	5	10	0	0	5	5
American Samoa	1	0	0	0	0	0
Gaum	2	37	0	0	37	0
Mariana Islands	1	0	0	0	0	0

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the End Stage Renal Disease Facility Survey, 1995.

Table 28

Dialysis treatment setting of end stage renal disease patients, by State: 1995

State	Facilities reporting	Total dialysis patients	Dialyzed outpatient Total	Dialyzed outpatient Percent	Dialyzed at home Total	Dialyzed at home Percent
TOTAL	2,810	200,162	166,571	83.2	33,591	16.8
Alabama	66	4,110	3,503	85.2	607	14.8
Alaska	2	134	100	74.6	34	25.4
Arizona	62	3,350	2,859	85.3	491	14.7
Arkansas	41	1,771	1,464	82.7	307	17.3
California	282	22,729	19,266	84.8	3,463	15.2
Colorado	20	1,721	1,369	79.5	352	20.5
Connecticut	23	2,288	1,662	72.6	626	27.4
Delaware	8	647	506	78.2	141	21.8
District of Columbia	23	1,474	1,342	91.0	132	9.0
Florida	185	11,274	9,800	86.9	1,474	13.1
Georgia	113	7,157	6,191	86.5	966	13.5
Hawaii	14	1,247	1,147	92.0	100	8.0
Idaho	6	361	246	68.1	115	31.9
Illinois	104	8,912	7,422	83.3	1,490	16.7
Indiana	46	4,071	3,052	75.0	1,019	25.0
Iowa	21	1,284	997	77.6	287	22.4
Kansas	24	1,356	1,051	77.5	305	22.5
Kentucky	34	2,179	1,774	81.4	405	18.6
Louisiana	80	4,746	4,166	87.8	580	12.2
Maine	6	517	423	81.8	94	18.2
Maryland	71	4,544	3,758	82.7	786	17.3
Massachusetts	53	3,877	3,235	83.4	642	16.6
Michigan	79	6,982	5,391	77.2	1,591	22.8
Minnesota	53	2,198	1,953	88.9	245	11.1
Mississippi	48	3,019	2,714	89.9	305	10.1
Missouri	61	3,872	3,031	78.3	841	21.7
Montana	12	396	314	79.3	82	20.7
Nebraska	15	898	575	64.0	323	36.0
Nevada	5	777	646	83.1	131	16.9
New Hampshire	6	457	314	68.7	143	31.3
New Jersey	63	6,837	5,546	81.1	1,291	18.9
New Mexico	23	1,319	1,043	79.1	276	20.9
New York	141	15,359	12,828	83.5	2,531	16.5
North Carolina	88	6,790	5,514	81.2	1,276	18.8
North Dakota	11	370	295	79.9	75	20.3
Ohio	86	7,586	5,892	77.7	1,694	22.3
Oklahoma	49	1,925	1,622	84.3	303	15.7
Oregon	31	1,583	1,144	72.3	439	27.7
Pennsylvania	138	9,633	8,233	85.5	1,400	14.5
Puerto Rico	28	2,657	2,075	78.1	582	21.9
Rhode Island	10	750	661	88.1	89	11.9
South Carolina	56	3,901	3,339	85.6	562	14.4
South Dakota	13	449	383	85.3	66	14.7
Tennessee	72	4,443	3,811	85.8	632	14.2
Texas	218	15,082	13,318	88.3	1,764	11.7
Utah	15	620	510	82.3	110	17.7
Vermont	2	153	144	74.5	39	25.5
Virgin Islands	2	75	75	100.0	0	0.0
Virginia	94	5,593	4,736	84.7	857	15.3
Washington	30	2,685	2,053	76.5	632	23.5
West Virginia	18	1,080	820	75.9	260	24.1
Wisconsin	50	2,590	2,001	77.3	589	22.7
Wyoming	5	97	87	89.7	10	10.3
American Samoa	1	44	44	100.0	0	0.0
Guam	2	153	116	75.8	37	24.2
Mariana Islands	1	40	40	100.0	0	0.0

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the End Stage Renal Disease Facility Survey, 1995.

Table 29

Patients completing a self-dialysis training course during the calendar year, by State: 1995

State	Facilities reporting	Total patients	HEMO	IPD	CAPD	CCPD
TOTAL	1,291	20,409	524	114	12,550	7,221
Alabama	22	296	0	0	204	92
Alaska	1	22	0	0	20	2
Arizona	8	412	4	0	224	184
Arkansas	15	209	2	0	146	61
California	156	2,223	26	0	1,315	882
Colorado	10	225	15	0	101	109
Connecticut	19	362	0	0	248	114
Delaware	4	80	0	0	46	34
District of Columbia	7	77	0	0	62	15
Florida	85	882	4	0	550	328
Georgia	54	671	4	14	416	237
Hawaii	2	54	4	0	41	9
Idaho	2	58	2	0	34	22
Illinois	40	689	6	0	452	231
Indiana	25	487	9	0	370	108
Iowa	13	182	10	0	110	62
Kansas	7	186	1	5	130	50
Kentucky	20	356	1	20	209	126
Louisiana	24	407	0	0	220	187
Maine	5	59	1	0	33	25
Maryland	37	457	3	0	286	168
Massachusetts	32	363	2	0	198	163
Michigan	41	911	12	1	752	146
Minnesota	12	170	3	0	98	69
Mississippi	9	185	11	0	131	43
Missouri	34	652	15	0	285	352
Montana	5	52	0	0	34	18
Nebraska	6	166	1	0	125	40
Nevada	4	75	1	0	50	24
New Hampshire	6	103	0	0	59	44
New Jersey	36	775	20	5	435	315
New Mexico	9	130	1	0	72	57
New York	80	1,299	57	7	799	436
North Carolina	34	771	8	5	494	264
North Dakota	5	52	0	0	27	25
Ohio	47	1,049	3	0	700	346
Oklahoma	15	177	0	0	126	51
Oregon	17	278	25	0	153	100
Pennsylvania	86	903	58	0	526	319
Puerto Rico	12	388	0	0	254	134
Rhode Island	7	65	0	0	42	23
South Carolina	22	376	11	0	202	163
South Dakota	2	36	0	0	32	4
Tennessee	29	395	17	46	198	134
Texas	82	1,040	75	2	540	423
Utah	5	72	1	0	51	20
Vermont	1	22	1	0	19	2
Virgin Islands	0	0	0	0	0	0
Virginia	42	529	4	0	358	167
Washington	14	370	96	9	193	72
West Virginia	13	158	5	0	102	51
Wisconsin	26	435	5	0	266	164
Wyoming	1	7	0	0	1	6
American Samoa	0	0	0	0	0	0
Guam	1	11	0	0	11	0
Mariana Islands	0	0	0	0	0	0

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the End Stage Renal Disease Facility Survey, 1995.

Table 30

Outpatient dialysis treatments given during the survey period, by State: 1995

State	Facilities reporting	Total treatments	Outpatient hemodialysis	Outpatient IPD
TOTAL	2,810	23,615,996	23,512,831	103,165
Alabama	66	487,281	487,281	0
Alaska	2	13,915	13,915	0
Arizona	62	408,529	407,656	873
Arkansas	41	198,097	197,863	234
California	282	2,690,639	2,690,099	540
Colorado	20	236,898	210,476	26,422
Connecticut	23	233,392	233,237	155
Delaware	8	71,216	71,216	0
District of Columbia	23	191,727	191,671	56
Florida	185	1,400,918	1,400,743	175
Georgia	113	907,482	906,827	655
Hawaii	14	166,781	166,781	0
Idaho	6	35,468	35,468	0
Illinois	104	1,012,434	1,007,561	4,873
Indiana	46	417,974	417,557	417
Iowa	21	218,050	217,944	106
Kansas	24	148,709	148,709	0
Kentucky	34	245,711	45,703	8
Louisiana	80	578,436	578,436	0
Maine	6	61,663	58,623	3,040
Maryland	71	512,184	511,095	1,089
Massachusetts	53	456,057	453,280	2,777
Michigan	79	747,993	739,197	8,796
Minnesota	53	281,639	281,639	0
Mississippi	48	384,391	384,375	16
Missouri	61	434,702	431,106	3,596
Montana	12	44,444	44,397	47
Nebraska	15	78,168	78,069	99
Nevada	5	84,108	84,066	42
New Hampshire	6	42,686	42,686	0
New Jersey	63	760,319	744,809	15,510
New Mexico	23	160,815	160,815	0
New York	141	1,821,095	1,814,528	6,567
North Carolina	88	772,269	771,998	271
North Dakota	11	43,810	43,810	0
Ohio	86	806,879	806,214	665
Oklahoma	49	226,350	226,281	69
Oregon	31	163,621	163,199	422
Pennsylvania	138	1,158,776	1,157,982	794
Puerto Rico	28	292,714	291,287	1,427
Rhode Island	10	94,216	94,216	0
South Carolina	56	459,082	459,080	2
South Dakota	13	51,315	51,315	0
Tennessee	72	537,320	531,366	5,954
Texas	218	1,955,609	1,943,138	12,471
Utah	15	81,126	78,121	3,005
Vermont	2	17,953	17,953	0
Virgin Islands	2	10,183	10,183	0
Virginia	94	674,478	672,850	1,628
Washington	30	299,935	299,690	245
West Virginia	18	116,279	116,279	0
Wisconsin	50	280,670	280,551	119
Wyoming	5	11,544	11,544	0
American Samoa	1	6,039	6,039	0
Guam	2	16,628	16,628	0
Mariana Islands	1	5,279	5,279	0

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the End Stage Renal Disease Facility Survey, 1995.

Table 31

Dialysis training treatments given during the survey period, by State: 1995

State	Facilities reporting	Total training Treatments	Hemo-dialysis	IPD	CAPD	CCPD
TOTAL	2.810	267.608	40.432	745	155.201	71.230
Alabama	66	2.122	68	0	1.433	621
Alaska	2	99	0	0	96	3
Arizona	62	1.672	54	0	1.144	474
Arkansas	41	1.518	35	0	1.171	312
California	282	36.509	21.382	0	11.037	4.090
Colorado	20	1.772	299	0	845	628
Connecticut	23	4.604	0	0	3.910	694
Delaware	8	352	0	0	289	63
District of Columbia	23	528	0	0	424	104
Florida	185	5.412	82	0	3.624	1.706
Georgia	113	26.464	113	35	20.311	6.005
Hawaii	14	558	50	0	470	38
Idaho	6	288	31	0	181	76
Illinois	104	57.201	226	0	38.374	18.601
Indiana	46	3,063	338	0	2.048	677
Iowa	21	1.624	357	1	907	359
Kansas	24	5.921	5.170	26	639	86
Kentucky	34	1.472	24	51	990	407
Louisiana	80	1.893	0	0	1.222	671
Maine	6	353	22	0	200	131
Maryland	71	5.546	97	0	4.611	838
Massachusetts	53	1.822	14	0	1.114	694
Michigan	79	5.062	201	1	4.253	607
Minnesota	53	950	47	0	615	288
Mississippi	48	1.617	205	0	1.116	296
Missouri	61	3.111	263	0	1.612	1 236
Montana	12	362	12	0	269	81
Nebraska	15	947	13	0	777	157
Nevada	5	731	40	0	471	220
New Hampshire	6	566	0	0	427	139
New Jersey	63	5.336	1,074	18	2.274	1.970
New Mexico	23	742	12	0	500	230
New York	141	14.234	2.848	45	8.350	2.991
North Carolina	88	4.276	114	166	2.608	1.388
North Dakota	11	367	0	0	245	122
Ohio	86	5.473	64	0	4.005	1.404
Oklahoma	49	830	0	1	609	220
Oregon	31	1.984	554	0	994	436
Pennsylvania	138	6.966	2.066	0	2.964	1.936
Puerto Rico	28	9.165	0	0	7.554	1.611
Rhode Island	10	347	0	0	264	83
South Carolina	56	19.224	987	0	9.477	8.760
South Dakota	13	292	0	0	237	55
Tennessee	72	2.601	425	348	1.060	768
Texas	218	11,797	1.200	27	3.756	6.814
Utah	15	548	6	0	442	100
Vermont	2	171	75	0	94	2
Virgin Islands	2	0	0	0	0	0
Virginia	94	2.557	44	0	1.927	586
Washington	30	3.260	1,575	26	1.275	384
West Virginia	18	1.093	186	0	576	331
Wisconsin	50	2.007	59	0	1.231	717
Wyoming	5	26	0	0	6	20
American Samoa	1	0	0	0	0	0
Guam	2	173	0	0	173	0
Mariana Islands	1	0	0	0	0	0

SOURCE: Health Care Financing Administration. Bureau of Data Management and Strategy Data from the End Stage Renal Disease Facility Survey. 1995

Table 32

Kidney transplant activity during the calendar: 1995

Category	Total	Percentage
Transplants performed at facility	11,902	100.0
Living donor	2,992	25.1
Living-unrelated cadaveric donor	424	3.6
Cadaveric donor	8,486	71.3
Patients awaiting transplant	28,883	100.0
Dialysis	26,539	91.9
Non-dialysis	2,344	8.1
Patients who received transplant at facility	11,885	—
Medicare status	11,885	100.0
Medicare	9,588	80.7
Medicare pending	984	8.3
Non-Medicare		
U.S. Resident	1,201	10.1
Other	112	0.9

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy. Data from the End Stage Renal Disease Facility Survey, 1995.

Table 33

Disposition of cadaveric kidneys, by source: 1995

		Disposition of cadaveric kidneys			
Source	Total	Transplanted at center	Sent to another center	Sent to foreign center	Nonviable kidneys
Total	11,901	8,685	2,715	1	500
Harvested at center	3,015	967	1,777	0	270
Obtained from other transplant hospital	1,041	775	235	0	31
Obtained from independent organ procurement organization	5,650	5,426	183	0	41
Obtained from non-transplant hospital	2,195	1,517	520	0	158
Non-viable kidneys	500	—	—	—	—
Used for research	190	—	—	—	—
Discarded	310	—	—	—	—

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy. Data from the End Stage Renal Disease Facility Survey, 1995.

Table 34

Kidney transplant center patient eligibility status, by State: 1995

State	Facilities ' reporting	Total transplant patients	Currently enrolled in Medicare	Medicare application pending	Non-Medicare U.S. Resident	Non-Medicare Other
TOTAL	237	11,885	9,588	984	1,201	112
Alabama	2	299	244	5	0	0
Arizona	4	138	104	11	22	1
Arkansas	3	109	97	11	1	0
California	24	1,424	1,017	93	294	20
Colorado	4	170	124	28	17	1
Connecticut	2	118	107	3	71	0
Delaware	1	4	4	0	0	0
District of Columbia	5	169	144	11	14	0
Florida	7	607	481	101	12	13
Georgia	4	285	259	19	7	0
Hawaii	1	17	17	0	0	0
Illinois	8	544	401	6	133	4
Indiana	2	159	140	3	16	0
Iowa	3	100	80	14	6	0
Kansas	2	76	59	2	15	0
Kentucky	3	157	98	57	1	1
Louisiana	8	223	190	13	17	3
Maine	1	33	30	0	3	0
Maryland	4	296	247	8	40	1
Massachusetts	10	337	270	29	32	6
Michigan	9	458	370	41	43	4
Minnesota	4	420	298	45	70	7
Mississippi	1	38	31	0	7	0
Missouri	11	326	277	13	36	0
Nebraska	3	91	57	0	31	3
Nevada	2	29	23	5	1	0
New Hampshire	1	26	25	0	1	0
NewJersey	3	199	173	2	23	1
New Mexico	2	82	72	6	4	0
New York	15	760	605	72	73	10
North Carolina	5	272	256	15	1	0
North Dakota	3	30	26	3	1	0
Ohio	11	552	460	87	3	2
Oklahoma	7	141	125	12	4	0
Oregon	1	142	132	9	1	0
Pennsylvania	13	779	541	61	164	13
Puerto Rico	1	37	36	1	0	0
South Carolina	1	108	99	5	4	0
South Dakota	1	14	14	0	0	0
Tennessee	8	262	244	8	6	4
Texas	18	804	717	30	45	12
Utah	2	142	105	35	2	0
Vermont	1	27	26	1	0	0
Virginia	6	228	199	9	18	2
Washington	5	245	216	23	3	3
West Virginia	2	36	32	1	3	0
Wisconsin	3	372	316	36	20	0

NOTE: The following States have no Medicare-approved transplant centers: Alaska, Idaho, Rhode Island, Wyoming, American Samoa, Guam, Virgin Islands, and Mariana Islands.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the End Stage Renal Disease Facility Survey, 1995.

Table 35

Number of kidney transplants performed and type of donor, by State: 1995

State	Facilities reporting	Total patients	Total transplants	Living related donor	Living unrelated donor	Cadaveric donor
TOTAL	237	11,885	11,902	2,992	424	8,486
Alabama	2	299	301	76	8	217
Arizona	4	138	138	352	101	100
Arkansas	3	109	110	43	3	64
California	24	1,424	1,425	350	73	1,002
Colorado	4	170	170	34	4	132
Connecticut	2	118	118	33	11	74
Delaware	1	4	4	3	0	1
District of Columbia	5	169	169	45	9	115
Florida	7	607	609	102	19	488
Georgia	4	285	285	99	11	175
Hawaii	1	17	17	7	0	10
Illinois	8	544	544	139	8	397
Indiana	2	159	159	30	1	128
Iowa	3	100	100	28	1	71
Kansas	2	76	76	19	156	100
Kentucky	3	157	157	31	1	125
Louisana	8	223	223	38	3	182
Maine	1	33	33	9	4	20
Maryland	4	296	296	76	13	207
Massachusetts	10	337	337	132	24	181
Michigan	9	458	459	148	29	282
Minnesota	4	420	421	172	25	224
Mississippi	1	38	38	4	0	34
Missouri	11	326	326	89	11	226
Nebraska	3	91	94	27	4	63
Nevada	2	29	29	7	3	19
New Hampshire	1	26	26	4	0	22
New Jersey	3	199	199	29	1	169
New Mexico	2	82	82	17	2	63
New York	15	760	760	206	25	529
North Carolina	5	272	272	77	9	186
North Dakota	3	30	31	13	2	16
Ohio	11	552	553	133	14	406
Oklahoma	7	141	141	25	2	114
Oregon	1	142	142	40	0	102
Pennsylvania	13	779	780	129	26	625
Puerto Rico	1	37	37	20	26	11
South Carolina	1	108	108	17	0	91
South Dakota	1	14	14	4	0	10
Tennessee	8	262	262	59	15	188
Texas	18	804	804	158	20	626
Utah	2	142	142	42	6	94
Vermont	1	27	27	9	1	17
Virginia	6	228	229	69	5	155
Washington	5	245	245	77	10	158
West Virginia	2	36	36	6	1	29
Wisconsin	3	372	374	82	11	281

NOTE: The following States have no renal transplant centers: Alaska, Idaho, Montana, Rhode Island, Wyoming, American Samoa, Guam, Mariana Islands

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the End Stage Renal Disease Facility Survey, 1995.

Table 36

Distribution of kidney transplants and number of transplants, by State: 1995

State	Centers reporting	Total transplants	0 - 15		16 - 50		51 - 100		101 - 200		[illegible]	
			Total	Percent	Total	Percent	Total	Percent	Total	Percent	Total	Percent
TOTAL	237	11,902	60	25.3	87	36.7	63	26.6	22	9.3	5	[illegible]
Alabama	2	301	1	50.0	0	0.0	0	0.0	0	0.0	1	50.0
Arizona	4	138	2	50.0	1	25.0	1	25.0	0	0.0	0	0.0
Arkansas	3	110	1	33.3	0	0.0	2	0.0	0	0.0	0	0.0
California	24	1,425	6	25.0	9	37.5	4	16.7	4	16.7	1	4.2
Colorado	4	170	1	25.0	2	50.0	1	25.0	0	0.0	0	0.0
Connecticut	2	118	0	0.0	0	0.0	2	100.0	0	0.0	0	0.0
Delaware	1	4	1	100.0	0	0.0	0	0.0	0	0.0	0	0.0
District of Columbia	5	169	3	60.0	1	20.0	0	0.0	1	20.0	0	0.0
Florida	7	609	1	14.3	2	28.6	0	0.0	4	57.1	0	0.0
Georgia	4	285	0	0.0	1	25.0	2	50.0	1	25.0	0	0.0
Hawaii	1	17	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0
Illinois	8	544	1	12.5	1	12.5	4	50.0	2	25.0	0	0.0
Indiana	2	159	0	0.0	0	0.0	2	100.0	0	0.0	0	0.0
Iowa	3	100	2	66.7	0	0.0	1	33.3	0	0.0	0	0.0
Kansas	2	76	0	0.0	2	100.0	0	0.0	0	0.0	0	0.0
Kentucky	3	157	1	33.3	0	0.0	2	66.7	0	0.0	0	0.0
Louisiana	8	223	4	50.0	3	37.5	1	12.5	0	0.0	0	0.0
Maine	1	33	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0
Maryland	4	296	1	25.0	1	25.0	1	25.0	1	25.0	0	0.0
Massachusetts	10	337	1	10.0	7	70.0	2	20.0	0	0.0	0	[illegible]
Michigan	9	459	1	11.1	4	44.4	3	33.3	1	11.1	0	[illegible]
Minnesota	4	421	1	25	0	0.0	2	50.0	0	0.0	1	25
Mississippi	1	38	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0
Missouri	11	326	4	36.4	5	45.5	2	18.2	0	0.0	0	0.0
Nebraska	3	9	1	33.3	1	33.3	1	33.3	0	0.0	0	0.0
Nevada	2	29	1	50.0	1	50.0	0	0.0	0	0.0	0	0.0
New Hampshire	1	26	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0
New Jersey	3	199	0	0.0	2	66.7	0	0.0	1	33.3	0	0.0
New Mexico	2	82	0	0.0	2	100.0	0	0.0	0	0.0	0	0.0
New York	15	760	3	20.0	4	26.7	7	46.7	1	6.7	0	0.0
North Carolina	5	272	0	0.0	3	60.0	2	40.0	0	0.0	0	0.0
North Dakota	3	31	3	100.0	-0	0.0	0	0.0	0	0.0	0	0.0
Ohio	11	553	2	18.2	4	36.4	4	36.4	1	9.1	0	0.0
Oklahoma	7	141	4	57.1	3	42.9	0	0.0	0	0.0	0	0.0
Oregon	1	142	0	0.0	0	0.0	0	0.0	1	100.0	0	0.0
Pennsylvania	13	780	3	23.1	4	30.8	4	30.8	1	7.7	1	7.7
Puerto Rico	1	37	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0
South Carolina	1	108	0	0.0	0	0.0	0	0.0	1	100.0	0	0.0
South Dakota	1	14	1	100.0	0	0.0	0	0.0	0	0.0	0	0.0
Tennessee	8	262	2	25.0	4	50.0	2	25.0	0	0.0	0	0.0
Texas	18	804	5	27.8	6	33.3	6	33.3	1	5.6	0	0.0
Utah	2	142	0	0.00	0	0.0	2	100.0	0	0.0	0	0.0
Vermont	1	27	0	0.0	0	0.0	1	100.0	0	0.0	0	0.0
Virginia	6	229	0	0.0	5	83.3	1	16.7	0	0.0	0	0.0
Washington	5	245	1	20.0	2	40.0	2	40.0	0	0.0	0	0.0
West Virginia	2	36	1	50.0	1	50.0	0	0.0	0	0.0	0	0.0
Wisconsin	3	374	1	33.3	0	0.0	0	0.0	1	33.3	1	33.3

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the End Stage Renal Disease Facility Survey, 1995

Table 37

Dialysis patients by profit and nonprofit providers, by State: 1995

State	Total dialysis patients	Hospital dialysis facility		Independent dialysis facility	
		Profit	Nonprofit	Profit	Nonprofit
TOTAL	200,162	1,138	50,074	125,385	23,565
Alabama	4,110	0	436	3,260	414
Alaska	134	0	0	0	134
Arizona	3,350	0	55	2,852	443
Arkansas	1,771	0	405	1,291	75
California	22,729	144	3,049	17,269	2,287
Colorado	1,721	0	185	1,536	0
Connecticut	2,288	0	1,219	1,069	0
Delaware	647	0	25	622	0
District of Columbia	1,474	0	179	1,174	121
Florida	11,274	37	594	9,427	1,216
Georgia	7,157	81	649	5,529	808
Hawaii	1,247	39	768	440	0
Idaho	361	0	94	0	267
Illinois	8,912	99	2,427	6,386	0
Indiana	4,071	0	1,321	2,701	49
Iowa	1,284	0	924	240	120
Kansas	1,356	0	101	1,177	78
Kentucky	2,179	0	282	1,187	710
Louisiana	4,746	0	251	4,157	338
Maine	517	0	181	336	0
Maryland	4,544	0	901	2,974	669
Massachusetts	3,877	0	1,197	2,487	193
Minnesota	2,198	0	1,163	651	382
Mississippi	3,019	0	33	1,121	1,865
Missouri	3,872	62	976	1,851	983
Montana	396	20	316	28	32
Nebraska	898	0	422	181	295
Nevada	777	0	131	646	0
New Hampshire	457	0	185	272	0
New Jersey	6,837	0	4,541	1,858	438
New Mexico	1,319	146	310	619	244
New York	15,359	0	8,280	4,886	2,193
North Carolina	6,790	0	359	5,894	537
North Dakota	370	0	356	0	14
Ohio	7,586	165	3,380	2,610	1,431
Oklahoma	1,925	0	723	1,020	182
Oregon	1,583	0	616	919	48
Pennsylvania	9,633	36	2,367	6,191	1,039
Puerto Rico	2,657	31	724	1902	0
Rhode Island	750	0	15	490	245
South Carolina	3,901	30	48	3,219	604
South Dakota	449	0	311	138	0
Tennessee	4,443	0	485	2,524	1,434
Texas	15,082	145	1,037	13,532	368
Utah	620	59	238	62	261
Vermont	153	0	153	0	0
Virgin Islands	75	0	75	0	0
Virginia	5,593	0	1,081	4,512	0
Washington	2,685	0	1,222	114	1,349
West Virginia	1,080	44	563	368	105
Wisconsin	2,590	0	1,516	1,062	12
Wyoming	97	0	15	82	0
American Samoa	44	0	44	0	0
Guam	153	0	116	37	0
Mariana Islands	40	0	0	0	40

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the End Stage Renal Disease Facility Survey, 1995.

Table 38

Dialysis patients receiving care by type of facility: 1983-95

		Independent dialysis facility				Hospital dialysis facility			
Year	Total patients	Outpatients	Percent change	Home patients	Percent change	Outpatients	Percent change	Home patients	Percent change
1983	71,987	35,001	15.1	5,162	35.7	23,340	-1.8	8,483	7.0
1984	78,483	39,015	11.5	6,067	17.5	24,230	3.8	9,171	8.1
1985	84,797	42,921	10.0	6,896	13.7	25,473	5.1	9,507	3.7
1986	90,886	47,435	10.5	7,467	8.3	26,365	3.5	9,619	1.2
1987	98,432	52,459	10.6	8,356	11.9	27,690	5.0	9,927	3.2
1988	105,958	58,371	11.3	8,930	6.9	28,824	4.1	9,93	-1.0
1989	116,169	65,643	12.5	10,095	13.0	30,305	5.1	10,126	3.0
1990	129,800	74,377	13.3	11,849	17.4	32,783	8.2	10,791	6.6
1991	142,488	82,690	11.2	13,535	14.2	34,681	5.8	11,582	7.3
1992	157,354	93,036	12.5	16,257	20.1	36,166	4.3	11,895	2.7
1993	171,479	103,601	11.4	18,698	15.0	37,079	2.5	12,101	1.7
1994	186,822	114,891	10.9	20,687	10.6	38,783	4.6	12,461	3.0
1995	200,162	126,673	10.3	22,277	7.7	39,898	2.9	11,314	-0.8
				Average annual percent change					
1983-95		—	11.3	—	13.0	—	4.6	—	2.4

NOTE: Average annual percent change calculated by use of compounding.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the End Stage Renal Disease Facility Survey, 1983-95.

Department of Veterans Affairs dialysis statistics

As of December 31, 1993, (the latest year for which data are available) there were 83 Department of Veterans Affairs (DVA) dialysis centers providing services to dialysis patients. The statistics displayed in Table 39 include 521 patients (all of whom were on chronic dialysis) who were dialyzing at 13 Medicare-approved Department of Veterans Affairs facilities. Data on the number of continuous ambulatory peritoneal dialysis (CAPD) or continuous cycling peritoneal dialysis (CCPD) patients are not captured as a separate category by the DVA, but are included with other peritoneal dialysis patients.

The data displayed in Table 39 reflect counts taken on December 31 for years 1988 through 1993 and include dialysis center satellite and contract fee dialysis patient counts. The number of DVA dialysis patients decreased 2.8 percent between 1988 and 1993 (3,722 and 3,228, respectively). However, the total number of DVA dialysis patients remained relatively stable since 1989. The number of staff-assisted hemodialysis patients in DVA dialysis centers increased from 1,889 in 1988 to 1,930 in 1993—an increase of 5.4 percent. The number of patients dialyzing at home declined 7.6 percent from 1988 to 1993 (860 and 580, respectively).

Table 39

Number of patients for Department of Veterans Affairs dialysis facilities, by type of dialysis: 1988-93

	All patients						Average annual percent change
Type of dialysis	1988	1989	1990	1991	1992	1993	1988-93
All modalities	3,722	3,389	3,293	3,433	3,332	3,228	-2.8
Staff-assisted	1,934	1,944	1,924	2,021	2,024	1,981	0.5
Hemodialysis	1,889	1,828	1,865	1,976	1,985	1,930	0.4
Peritoneal dialysis	45	116	59	45	39	51	2.5
Home	860	720	712	703	655	580	-7.6
Hemodialysis	378	293	259	190	168	137	-18.4
Peritoneal dialysis	482	427	453	513	487	443	-1.7
Contract	590	511	427	496	456	500	-3.3
Hemodialysis	558	487	409	470	434	478	-3.0
Peritoneal dialysis	32	24	18	26	22	22	-7.2
Limited	121	73	88	78	75	62	-12.5
Hemodialysis	121	69	84	70	66	61	-12.8
Peritoneal dialysis	0	4	4	8	9	1	100.0
Acute	186	123	129	124	116	96	-12.4
Hemodialysis	177	120	123	120	112	93	-12.1
Peritoneal dialysis	9	3	6	4	4	3	-19.7
In training	31	18	13	11	6	9	-22.0
Hemodialysis	21	9	5	4	0	6	-22.2
Peritoneal dialysis	10	9	8	7	6	3	-21.4

SOURCE: Department of Veterans Affairs; Data from the Veterans Health Administration, Medical Service, Office of Clinical Programs, 1988-93.

Survival analyses

Program experience with respect to both patient and graft survival from onset of renal failure, or from date of kidney transplant, to 5 years subsequent is discussed in this section. This analysis covered the period from January 1, 1990 through December 31, 1994. All Medicare beneficiaries with renal failure occurring on or after January 1, 1990 through December 31, 1994 were included in the analysis of dialysis survival (N = 254,862). The transplant survival analysis included Medicare beneficiaries whose transplants occurred on or after January 1, 1990 through December 31, 1994. The total number of persons included in the computation of transplant survival was 47,439 (36,056 cadaveric donor transplants and 11,383 living-related donor transplants). The data sources used for the computation of kidney transplant survival do not distinguish between living-related and living-unrelated donors. Depending upon specific reporting procedures at the transplant hospitals, living-unrelated donors may be included in the living-related category or the cadaveric category. Given the small number of such cases (0.9 percent in 1990 to 2.3 percent in 1994 as shown in Table 20), it is expected that the outcome of the analyses will not be affected to any great extent. Patient and graft survival were tracked through April 30, 1996.

Data

The computation of survival rates for dialysis patients requires a date of renal failure onset along with the date of death or the date of transplantation (if the patient was subsequently transplanted). Computation of survival rates for transplant patients requires the date of transplantation and the date of death (for patient survival) or the date of graft failure (for graft survival). The date of renal failure onset was defined as the date of first dialysis and was taken from the patients' medical evidence records (HCFA-2728) or the outpatient dialysis records (HCFA-1450). In the absence of these records, the date of renal failure onset was estimated from the entitlement records. The date of death was obtained from the Master Beneficiary Records that are maintained for all Medicare beneficiaries or the ESRD Death Notification Form (HCFA-2746). The date of transplant was obtained from the transplant files provided to HCFA from the Organ Procurement and Transplant Network (OPTN) or from the inpatient hospital bill (HCFA-UB-92). The date of transplant failure was either obtained from the OPTN, calculated based on a record of outpatient dialysis sessions, or based on the date of a subsequent transplant.

Survival rates were calculated using a standard actuarial modified life-table analysis. For dialysis patients, survival was measured beginning 90 days following the date of renal failure onset until death, with right censoring for transplantation or the end of the observation period (April 30, 1996). The 90 day lag in calculation of the start date was included to avoid the potential bias of excluding persons who died during the interval between renal failure and Medicare entitlement. For transplants, patient survival was measured from the date of transplantation until death, with right censoring for the end of the observation period. Graft survival for transplants was measured from the date of transplantation until graft failure or death, with right censoring for the end of the observation period.

Because it has been found that there are significant age differences among the population subgroups (for example, white persons on dialysis are generally older than black persons on dialysis and persons whose renal failure is due to hypertension are generally older than persons whose renal failure is due to diabetes), the survival rates for each sex, race, and primary diagnostic subgroup were age-adjusted to the age distribution for all persons in each table. For example, survival rates for males and females on dialysis were age-adjusted to the age distribution for all persons on dialysis. Individual survival rates among cadaveric donor transplants were age-adjusted to all cadaveric donor transplants, and individual survival rates among living-related donor transplants were age-adjusted to all living-related donor transplants. Therefore, survival differences due to age were largely eliminated.

Results

The results of the analysis of dialysis patient survival are presented in Table 40. At 1 year from the 90 day offset following renal failure onset, 78.7 percent of patients were still alive. At 3 years, this had decreased to 50.6 percent and at 5 years to 33.0 percent. There were notable differences by age group. The two groups comprised of persons less than 25 years of age at the time of renal failure had the highest 1-year survival rates of 93.3 percent for persons under 15 years of age, and 95.6 percent for persons 15 to 24 years of age. These two groups maintained the highest survival rates across the 5 year span. By 5 years after renal failure, persons under 15 years of age had the highest survival rate of all age groups at 82.3 percent. The rate of survival decreased for each older age cohort. For those over 75 years of age, the 1-year survival rate, was only 63.2 percent; slightly more than one-quarter (27.3 percent) survived 3 years; and only 11.4 percent survived 5 years on dialysis after renal failure. At the end of 1 year, the survival rate for females was 1.2 percent greater than the rate for males (79.4 percent and 78.2 percent, respectively). This differential remained fairly constant throughout the five year period. By racial group, the highest survival rates for dialysis patients after 1 year were found among Asians (85.0 percent), black persons (82.2 percent) and American Indians (81.7 percent). White persons had the lowest 1 year survival rate at 77.1 percent. For all 5 years, Asian persons maintained the highest survival rates, while the survival rate for white persons remained the lowest. In terms of the reported cause of renal failure (i.e., the primary diagnosis) for dialysis patients, the lowest survival rates were found among those persons whose renal failure was attributed to diabetes. At 1 year, the survival rate for the diabetic group (76.6 percent) was 2.4 percentage points lower than the next lowest group - those for whom renal failure was attributed to obstructive nephropathy (79.0 percent). By year 5, the survival rate for the diabetic group had decreased to 24.3 percent, 13.5 percentage points lower than the next lowest group, persons whose renal failure was attributed to hypertension (37.8 percent). The highest survival rate for year 5 was found for those patients with polycystic kidney disease (50.1 percent). The 5-year survival rate for those with glomerulonephritis was 42.8 percent; for those with interstitial nephritis it was 39.9 percent; and for those with obstructive nephropathy it was 39.2 percent.

Patient survival rates for persons with cadaver donor transplants and living-related donor transplants are presented in Tables 41 and 42, respectively. Among cadaver donor transplant patients, patient survival rates were 93.7 percent at 1 year, 87.4 percent at 3 years, and 79.9 percent at 5 years. The data show that the likelihood of patient survival decreased with advancing age. The 5-year survival rate for cadaver donor transplant patients was 93.2 percent for persons under 15 years of age and 92.1 percent for those 15 to 24 years of age, decreasing to 51.4 percent for persons 75 years of age and older. Females had slightly higher survival rates than did males after a cadaver donor transplant. At year 1, the female survival rate (93.9 percent) exceeded the male survival rate (93.6 percent) by 0.3 percentage point. By year 5, the female survival rate (81.0 percent) exceeded the male survival rate(79.2 percent) by 1.8 percentage points.

Five year patient survival rates by race ranged from a high of 83.2 percent among Asians to a low of 76.3 among American Indians. In terms of the reported cause of renal failure for cadaver donor transplant recipients, the lowest survival rates across the 5 years reported were found for those patients with diabetes. At year 1, the survival rate for the diabetic group (91.6 percent) was 2.3 percent lower than the next lowest group, those for whom renal failure was attributed to hypertension (93.9 percent). By year 5, the survival rate for the diabetic group had declined to 71.1 percent. This was 8.7 percent lower than the next lowest category, the hypertension group, which had a survival rate of 79.8 percent. The highest 5-year survival rate was experienced by persons whose renal failure was attributed to polycystic kidney disease (87.5 percent). Of all cadaver transplants performed between 1988 and 1992, 86.8 percent were first transplants. Patient survival was slightly higher for first transplants than for subsequent transplants at 5 years post transplant (80.2 percent and 78.3 percent, respectively).

Among living-related donor transplant patients, the survival rate for year 1 was 97.1 percent, for year 3 was 93.7 percent, and for year 5 was 89.6 percent (Table 42). As with cadaver donor recipients, survival for living-related donor transplant patients decreased with age. At year 1, all age groups, with the exception of the 65 to 74 years of age group, had survival rates that exceeded 90 percent. At year 3, the survival rate for those people under 45 years of age still exceeded 94 percent. Finally, in year 5, the survival rate for those under 35 years of age continued to be higher than 90 percent. The survival rates for females were comparable to that for males, across the 5 years. The largest difference occurred in year 5, when the female rate (89.1 percent) was 1.0 percentage point lower than the male rate (90.1 percent). At year 5, the survival rate for Asian persons was 93.6 percent, followed by American Indians and whites at 89.9 percent, and black persons at 87.2 percent. As with dialysis and cadaver donor transplant recipients, the survival rate for living-related donor transplant patients was lowest for persons for whom diabetes was reported to be the primary cause of renal failure. By year 5, the survival rate for the diabetic group (84.0 percent) was 5.5 percentage points lower than the rate for the next lower group--the hypertension group (89.5 percent). Living-related donor transplants performed as subsequent transplants were fairly unusual and accounted for only 7.6 percent of living-related donor transplants. Patient survival at 5 years was lower (85.5 percent) for subsequent living-related donor transplants than for first living-related donor transplants (89.9 percent).

Kidney graft survival rates for cadaveric transplants and living-related donor transplants are presented in Tables 43 and 44, respectively. Among cadaver donor transplants, 83.0 percent of the kidney grafts survived for at least 1 year; 72.2 percent survived 3 years; and 61.7 percent were still functioning at year 5. Graft survival rates did not vary much by age, with all age groups under 65 experiencing 1 year graft survival rates of 80 percent or greater. At 5 years post transplant, graft survival rates ranged from a low of 46.3 percent for persons 75 years of age and over to a high of 64.2 percent for persons 25 to 34 years of age. Graft survival rates for males and females were similar, with one year survival slightly higher for males and five year survival slightly higher for females. The highest 5 year cadaver donor graft survival rates among racial groups were for American Indians (67.9 percent) and Asians (66.1 percent). By year 5, white persons had a graft survival rate of 64.8 percent, while the rate for black persons was 51.5 percent.

All diagnostic cause of renal failure groups had one year survival rates over 80 percent. By year five, survival rates ranged from a low of 55.2 percent among persons whose renal failure was attributed to hypertension, to a high of 69.5 percent for persons whose renal failure was attributed to polycystic kidney disease. Much of these graft survival differences are due to higher patient mortality in some groups. First cadaver transplants had a higher first year graft survival rate than subsequent cadaver transplants (83.7 percent and 79.1 percent, respectively). At 5 years post transplant, graft survival was 62.4 percent for first cadaver transplants and 56.9 percent for subsequent cadaver transplants.

Among living-related donor transplants (Table 44), 91.5 percent of the kidney grafts survived to year 1; 84.4 percent survived to year 3; and76.3 percent survived to year 5. At year 1, graft survival ranged from 84.0 percent (65 to 74 years of age group) to 92.8 percent (25 to 34 years of age group). At 5 years post transplant, most age groups had about 75 percent to 80 percent of grafts still functioning. Lower 5 year graft survival rates were evident for persons 65 to 74 years of age (68.1 percent) and 55 to 64 years of age(69.9 percent). As with cadaver transplants, much of the graft survival differences are due to patient survival differences. Graft survival rates were similar for males and females at each of the 5 year periods. Both Asians and American Indians had one year graft survival rates over 94 percent. One year graft survival was lowest for black persons (88.8 percent). The highest 5-year survival rate was found for Asian persons (83.1 percent) followed by American Indians (81.9 percent), white persons (77.9 percent), and black persons (64.7 percent).

Five year graft survival rates by primary diagnosis category were generally about 75 percent. The exception was for persons whose renal failure was attributed to polycystic kidney disease, for whom the five year graft survival rate was 84.3 percent.

There were notable differences in graft survival rates for living-related donor transplants between first and subsequent transplants. At one year post transplant, the survival rate for first transplants were 5.8 percent higher than for subsequent transplants (91.9 percent and 86.1 percent, respectively). At five years, survival rates for first transplants was 76.8 percent, 8.8 percent greater than the 68.0 percent survival rate for subsequent living donor transplants.

Table 40

Dialysis patient survival, by age, sex, race, and primary diagnosis: 1990-94

Age, sex, race, and primary diagnosis	Total	Percent surviving 1 year	 2 years	 3 years	 4 years	 5 years
All persons	254,862	78.7 (0.1)	63.2 (0.1)	50.6 (0.1)	40.6 (0.1)	33.0 (0.2)
Age						
Under 15 years	2,031	93.3 (0.6)	90.0 (0.9)	84.9 (1.4)	83.2 (1.6)	82.3 (1.8)
15-24 years	5,959	95.6 (0.3)	91.6 (0.4)	88.2 (0.6)	83.8 (0.8)	80.1 (1.1)
25-34 years	16,607	90.8 (0.2)	82.0 (0.4)	74.3 (0.5)	67.7 (0.6)	61.3 (0.7)
35-44 years	27,128	89.0 (0.2)	78.7 (0.3)	69.2 (0.4)	60.8 (0.4)	53.8 (0.6)
45-54 years	36,146	87.5 (0.2)	75.4 (0.3)	63.7 (0.3)	52.8 (0.4)	43.4 (0.5)
55-64 years	53,312	81.4 (0.2)	65.9 (0.2)	52.5 (0.3)	41.2 (0.3)	32.6 (0.3)
65-74 years	70,195	73.2 (0.2)	54.4 (0.2)	39.9 (0.2)	28.9 (0.2)	21.1 (0.2)
75 years or over	43,484	63.2 (0.2)	41.9 (0.2)	27.3 (0.2)	17.5 (0.2)	11.4 (0.3)
Sex						
Male	136,470	78.2 (0.1)	62.4 (0.1)	49.7 (0.2)	39.7 (0.2)	32.2 (0.2)
Female	118,392	79.4 (0.1)	64.1 (0.2)	51.7 (0.2)	41.5 (0.2)	33.9 (0.2)
Race						
Asian	5,868	85.0 (0.5)	72.8 (0.6)	61.4 (0.8)	50.8 (0.9)	41.7 (1.1)
Black	75,950	82.2 (0.1)	68.5 (0.2)	56.9 (0.2)	47.0 (0.2)	38.7 (0.3)
White	165,062	77.1 (0.1)	60.5 (0.1)	47.2 (0.1)	36.8 (0.2)	29.5 (0.2)
American Indian	3,151	81.7 (0.7)	66.6 (0.9)	53.6 (1.0)	43.4 (1.2)	35.4 (1.4)
Other/unknown	4,831	80.9 (0.5)	67.1 (0.7)	53.7 (0.9)	44.5 (1.1)	37.6 (1.4)
Primary diagnosis						
Diabetes	93,031	76.6 (0.1)	58.2 (0.2)	43.7 (0.2)	32.5 (0.2)	24.3 (0.2)
Glomerulonephritis	29,222	84.1 (0.2)	71.4 (0.3)	60.1 (0.4)	50.5 (0.4)	42.8 (0.5)
Hypertension	71,532	80.5 (0.2)	66.4 (0.2)	54.6 (0.2)	45.4 (0.2)	37.8 (0.3)
Polycystic kidney disease	6,379	90.5 (0.3)	81.0 (0.5)	69.7 (0.7)	59.3 (0.9)	50.1 (1.2)
Interstitial nephritis	6,948	81.9 (0.5)	68.8 (0.6)	57.1 (0.7)	46.8 (0.8)	39.9 (1.0)
Obstructive nephropathy	4,469	79.0 (0.6)	66.8 (0.8)	56.2 (0.9)	46.7 (1.0)	39.2 (1.1)
Other	16,651	70.4 (0.4)	55.5 (0.4)	44.5 (0.5)	36.5 (0.5)	30.0 (0.6)
Unknown	11,920	79.4 (0.4)	65.5 (0.5)	54.1 (0.5)	44.7 (0.6)	36.8 (0.7)
Not Reported	14,710	78.5 (0.3)	63.3 (0.4)	52.4 (0.5)	43.2 (0.6)	37.1 (0.7)

NOTES: Numbers in parentheses represent the standard error of the estimate for each value. Rates based on fewer than 30 observations are not displayed. Survival rates for individual sex, race, and primary diagnosis groups were age-adjusted to the age distribution of all dialysis patients.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, September 1996, 1990-94.

Table 41

Cadaver donor transplant patient survival, by age, sex, race, and primary diagnosis: 1990-94

Age, sex, race, and primary diagnosis	Total	Percent surviving 1 year	 2 years	 3 years	 4 years	 5 years
All Persons	36,056	93.7 (0.1)	90.7 (0.1)	87.4 (0.1)	84.0 (0.2)	79.9 (0.2)
Age						
Under 15 years	782	96.8 (0.6)	96.1 (0.7)	95.0 (0.8)	93.6 (1.0)	93.2 (1.1)
15-24 years	2,603	97.8 (0.3)	96.4 (0.4)	94.7 (0.5)	93.6 (0.5)	92.1 (0.7)
25-34 years	7,085	96.3 (0.2)	94.3 (0.3)	92.4 (0.3)	90.1 (0.4)	87.6 (0.5)
35-44 years	9,669	94.8 (0.2)	92.2 (0.3)	89.6 (0.3)	87.0 (0.4)	83.2 (0.5)
45-54 years	8,437	93.0 (0.3)	89.3 (0.3)	85.2 (0.4)	80.9 (0.5)	76.6 (0.6)
55-64 years	5,737	89.9 (0.4)	85.5 (0.5)	80.4 (0.6)	75.6 (0.7)	68.6 (0.8)
65-74 years	1,683	86.9 (0.8)	81.0 (1.0)	74.4 (1.2)	67.8 (1.4)	59.4 (1.8)
75 years or over	60	73.3 (5.7)	67.7 (6.1)	65.1 (6.4)	60.8 (7.3)	51.4 (10.6)
Sex						
Male	21,989	93.6 (0.2)	90.6 (0.2)	87.1 (0.2)	83.5 (0.3)	79.2 (0.4)
Female	14,067	93.9 (0.2)	90.9 (0.2)	87.9 (0.3)	84.9 (0.3)	81.0 (0.4)
Race						
Asian	1,054	95.2 (0.7)	92.7 (0.8)	90.0 (1.0)	87.5 (1.2)	83.2 (1.5)
Black	8,447	94.1 (0.3)	90.7 (0.3)	87.3 (0.4)	83.7 (0.5)	79.0 (0.6)
White	25,871	93.6 (0.2)	90.6 (0.2)	87.4 (0.2)	84.0 (0.3)	80.0 (0.3)
American Indian	379	93.4 (1.3)	90.2 (1.6)	85.9 (2.0)	82.0 (2.4)	76.3 (3.0)
Other/unknown	305	94.3 (1.3)	89.8 (1.7)	89.3 (1.8)	87.3 (2.1)	86.3 (2.4)
Primary diagnosis						
Diabetes	8,667	91.6 (0.3)	86.7 (0.4)	81.8 (0.4)	76.9 (0.5)	71.1 (0.7)
Glomerulonephritis	8,681	95.1 (0.2)	93.0 (0.3)	90.6 (0.3)	87.9 (0.4)	84.3 (0.5)
Hypertension	6,056	93.9 (0.3)	90.9 (0.4)	87.7 (0.5)	83.9 (0.6)	79.8 (0.7)
Polycystic kidney disease	2,895	95.5 (0.4)	93.3 (0.5)	91.5 (0.6)	89.7 (0.7)	87.5 (0.9)
Interstitial nephritis	1,378	94.6 (0.6)	92.1 (0.7)	89.9 (0.9)	87.8 (1.0)	85.6 (1.2)
Obstructive nephropathy	662	95.8 (0.7)	93.9 (0.9)	91.3 (1.1)	86.4 (1.5)	83.2 (1.8)
Other	2,777	92.8 (0.4)	90.0 (0.5)	85.8 (0.6)	83.0 (0.7)	78.9 (0.9)
Unknown	2,490	95.0 (0.4)	91.7 (0.5)	88.6 (0.7)	85.4 (0.8)	81.1 (1.0)
Not Reported	2,450	93.2 (0.5)	90.8 (0.6)	87.5 (0.7)	84.1 (0.8)	79.6 (1.1)
Transplant number						
First transplant	31,287	93.8 (0.1)	90.8 (0.2)	87.5 (0.2)	84.2 (0.2)	80.2 (0.3)
Subsequent transplants	4,769	93.4 (0.3)	90.1 (0.4)	86.5 (0.5)	82.6 (0.6)	78.3 (0.7)

NOTES: Numbers in parentheses represent the standard error of the estimate for each value. Rates based on fewer than 30 observations are not displayed. Survival rates for individual sex, race, and primary diagnosis groups were age-adjusted to the age distribution of all cadaver donor transplant recipients.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, September 1996, 1990-94.

Table 42
Living-related donor transplant patient survival, by age, sex, race, and primary diagnosis: 1990-94

Age, sex, race, and primary diagnosis	Total	Percent surviving									
		1 year		2 years		3 years		4 years		5 years	
All Persons	11,383	97.1	(0.2)	95.6	(0.2)	93.7	(0.2)	91.8	(0.3)	89.6	(0.4)
Age											
Under 15 years	903	96.6	(0.6)	96.3	(0.6)	95.9	(0.7)	95.0	(0.8)	94.3	(0.9)
15-24 years	1,684	98.3	(0.3)	97.8	(0.4)	96.7	(0.5)	95.8	(0.6)	95.4	(0.6)
25-34 years	3,055	98.2	(0.2)	97.1	(0.3)	95.5	(0.4)	94.6	(0.5)	93.0	(0.6)
35-44 years	2,698	97.9	(0.3)	96.4	(0.4)	94.5	(0.5)	92.3	(0.6)	89.8	(0.8)
45-54 years	1,833	96.4	(0.4)	94.4	(0.6)	91.6	(0.7)	88.4	(0.9)	84.6	(1.3)
55-64 years	988	93.2	(0.8)	90.6	(0.9)	86.5	(1.2)	82.4	(1.5)	77.4	(2.0)
65-74 years	213	88.7	(2.2)	82.8	(2.7)	77.2	(3.2)	74.4	(3.6)	74.4	(3.6)
75 years or over	9	—	—	—	—	—	—	—	—	—	—
Sex											
Male	6,558	97.0	(0.2)	95.7	(0.3)	93.5	(0.3)	91.6	(0.4)	90.1	(0.5)
Female	4,825	97.2	(0.2)	95.5	(0.3)	93.9	(0.4)	92.1	(0.5)	89.1	(0.6)
Race											
Asian	250	98.5	(0.8)	98.5	(0.8)	96.9	(1.2)	95.3	(1.6)	93.6	(2.5)
Black	1,598	96.5	(0.5)	94.1	(0.6)	91.4	(0.8)	89.6	(0.9)	87.2	(1.1)
White	9,254	97.2	(0.2)	95.8	(0.2)	94.0	(0.3)	92.1	(0.3)	89.9	(0.4)
American Indian	151	96.3	(1.6)	94.5	(2.0)	94.5	(2.0)	92.9	(2.7)	89.9	(3.4)
Other/unknown	130	98.0	(1.5)	98.0	(1.5)	96.8	(2.2)	95.5	(3.3)	93.8	(5.2)
Primary diagnosis											
Diabetes	2,303	96.0	(0.4)	93.4	(0.6)	90.4	(0.7)	87.5	(0.9)	84.0	(1.1)
Glomerulonephritis	3,122	97.7	(0.3)	96.7	(0.3)	95.3	(0.4)	93.8	(0.5)	92.3	(0.6)
Hypertension	1,301	96.6	(0.5)	95.1	(0.6)	93.2	(0.8)	91.2	(1.1)	89.5	(1.3)
Polycystic kidney disease	575	99.0	(0.6)	98.1	(0.8)	96.8	(1.0)	96.0	(1.1)	92.6	(1.7)
Interstitial nephritis	559	97.9	(0.6)	97.1	(0.7)	96.1	(0.8)	95.3	(1.0)	92.9	(1.5)
Obstructive nephropathy	408	97.9	(0.7)	96.3	(0.9)	95.0	(0.9)	93.0	(1.2)	93.0	(1.2)
Other	1,294	97.7	(0.4)	97.0	(0.5)	94.3	(0.6)	90.6	(0.8)	90.0	(0.9)
Unknown	852	97.8	(0.5)	97.2	(0.6)	95.7	(0.7)	94.2	(0.9)	92.3	(1.2)
Not Reported	969	97.2	(0.5)	95.4	(0.7)	93.5	(0.9)	92.3	(1.0)	90.4	(1.2)
Transplant number											
First transplant	10,513	97.2	(0.2)	95.7	(0.2)	93.7	(0.3)	91.8	(0.3)	89.9	(0.4)
Subsequent transplants	870	96.1	(0.6)	94.7	(0.7)	93.4	(0.9)	90.9	(1.1)	85.5	(1.8)

NOTES: Numbers in parentheses represent the standard error of the estimate for each value. Rates based on fewer than 30 observations are not displayed. Survival rates for individual sex, race, and primary diagnosis groups were age-adjusted to the age distribution of all living related donor transplant recipients.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, September 1996, 1990-94.

Table 43
Cadaver donor transplant graft survival, by age, sex, race, and primary diagnosis: 1990-94

Age, sex, race, and primary diagnosis	Total	Percent surviving									
		1 year		2 years		3 years		4 years		5 years	
All Persons	36,056	83.0	(0.2)	77.7	(0.2)	72.2	(0.2)	66.8	(0.3)	61.7	(0.3)
Age											
Under 15 years	782	82.1	(1.4)	77.4	(1.5)	73.2	(1.7)	69.2	(1.9)	65.2	(2.1)
15-24 years	2,603	83.0	(0.7)	75.7	(0.9)	68.3	(1.0)	62.0	(1.1)	56.3	(1.2)
25-34 years	7,085	83.8	(0.4)	78.5	(0.5)	73.2	(0.6)	68.3	(0.6)	64.2	(0.7)
35-44 years	9,669	83.9	(0.4)	79.0	(0.4)	74.2	(0.5)	68.5	(0.5)	63.7	(0.6)
45-54 years	8,437	83.2	(0.4)	77.8	(0.5)	72.2	(0.5)	67.2	(0.6)	62.7	(0.7)
55-64 years	5,737	81.5	(0.5)	76.6	(0.6)	71.3	(0.6)	65.5	(0.7)	58.8	(0.9)
65-74 years	1,683	80.0	(1.0)	73.8	(1.1)	66.7	(1.2)	60.7	(1.4)	51.7	(1.8)
75 years or over	60	66.7	(6.1)	61.0	(6.4)	58.6	(6.6)	54.7	(7.2)	46.3	(9.9)
Sex											
Male	21,989	83.3	(0.3)	77.8	(0.3)	72.2	(0.3)	66.6	(0.4)	61.2	(0.4)
Female	14,067	82.6	(0.3)	77.6	(0.4)	72.3	(0.4)	67.3	(0.4)	62.5	(0.5)
Race											
Asian	1,054	85.3	(1.1)	81.1	(1.2)	76.0	(1.4)	70.9	(1.6)	66.1	(1.9)
Black	8,447	81.2	(0.4)	73.1	(0.5)	65.3	(0.6)	58.1	(0.6)	51.5	(0.7)
White	25,871	83.5	(0.2)	79.0	(0.3)	74.4	(0.3)	69.5	(0.3)	64.8	(0.4)
American Indian	379	84.5	(1.9)	80.9	(2.1)	74.9	(2.4)	71.2	(2.7)	67.9	(3.1)
Other/unknown	305	86.5	(2.0)	78.2	(2.4)	75.6	(2.7)	69.5	(3.3)	64.9	(3.8)
Primary diagnosis											
Diabetes	8,667	83.3	(0.4)	77.5	(0.5)	71.8	(0.5)	65.9	(0.6)	59.9	(0.7)
Glomerulonephritis	8,681	83.2	(0.4)	78.5	(0.4)	73.7	(0.5)	68.5	(0.6)	63.4	(0.7)
Hypertension	6,056	82.4	(0.5)	75.7	(0.6)	67.9	(0.6)	60.9	(0.7)	55.2	(0.9)
Polycystic kidney disease	2,895	83.8	(0.7)	79.9	(0.7)	75.7	(0.8)	72.2	(0.9)	69.5	(1.0)
Interstitial nephritis	1,378	83.7	(1.0)	78.6	(1.1)	74.3	(1.2)	69.8	(1.4)	68.0	(1.5)
Obstructive nephropathy	662	85.3	(1.4)	81.2	(1.6)	76.7	(1.8)	68.7	(2.1)	59.4	(2.5)
Other	2,777	80.6	(0.7)	75.8	(0.8)	69.7	(0.9)	64.2	(1.0)	57.1	(1.2)
Unknown	2,490	83.2	(0.8)	76.8	(0.9)	71.5	(1.0)	66.4	(1.1)	61.5	(1.2)
Not Reported	2,450	83.8	(0.7)	79.5	(0.8)	74.8	(0.9)	71.0	(1.0)	67.1	(1.2)
Transplant number											
First transplant	31,287	83.7	(0.2)	78.4	(0.2)	72.9	(0.3)	67.5	(0.3)	62.4	(0.4)
Subsequent transplants	4,769	79.1	(0.6)	73.3	(0.6)	68.1	(0.7)	62.2	(0.8)	56.9	(0.9)

NOTES: Numbers in parentheses represent the standard error of the estimate for each value. Rates based on fewer than 30 observations are not displayed. Survival rates for individual sex, race, and primary diagnosis groups were age-adjusted to the age distribution of all cadaver donor transplant recipients.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, September 1996, 1990-94.

Table 44

Living-related donor transplant graft survival, by age, sex, race, and primary diagnosis: 1990-94

Age, sex, race, and primary diagnosis	Total	Percent surviving 1 year	 2 years	 3 years	 4 years	 5 years
All Persons	11,383	91 5 (0 3)	88 1 (0 3)	84 4 (0 4)	81 0 (0 4)	76 3 (0 5)
Age						
Under 15 years	903	88 6 (1 1)	85 9 (1 2)	82 7 (1 3)	79 4 (1 5)	75 4 (1 8)
15-24 years	1,684	92 6 (0 6)	88 2 (0 8)	82 7 (1 0)	78 8 (1 2)	73 6 (1 4)
25-34 years	3,055	92 8 (0 5)	89 6 (0.6)	85 9 (0 7)	83 3 (0 8)	79 2 (1 0)
35-44 years	2,698	92.6 (0.5)	89.4 (0 6)	86.6 (0 7)	83 3 (0 8)	78 6 (1 1)
45-54 years	1,833	91 2 (0 7)	88 2 (0 8)	84 8 (0 9)	81.0 (1 1)	75 5 (1 5)
55-64 years	988	88.1 (1.0)	84 2 (1.2)	80 4 (1.4)	75 6 (1 6)	69 9 (2 2)
65-74 years	213	84.0 (2.5)	79 2 (2.8)	73 6 (3 3)	70 8 (3 7)	68 1 (4 5)
75 years or over	9	— —	— —	— —	— —	— —
Sex						
Male	6,558	91 5 (0 3)	88 4 (0 4)	84 6 (0 5)	81 4 (0 6)	76 7 (0 7)
Female	4,825	91 6 (0 4)	87 8 (0 5)	84 3 (0 6)	80 5 (0 7)	75 8 (0 8)
Race						
Asian	250	94 4 (1 5)	92 7 (1 7)	89 9 (2 1)	76.5 (2 7)	83 1 (3 7)
Black	1,598	88 8 (0 8)	82 7 (1 0)	77 5 (1 1)	72 4 (1 3)	64 7 (1 8)
White	9,254	91 8 (0 3)	88 9 (0.3)	85 4 (0.4)	82 2 (0 5)	77 9 (0 6)
American Indian	151	94 2 (1 9)	90 6 (2 6)	86 8 (3 1)	85 1 (3 5)	81 9 (4 0)
Other/unknown	130	94 0 (2 2)	91 8 (2 7)	89 2 (3 6)	62 0 (4 3)	88 0 (5 9)
Primary diagnosis						
Diabetes	2,303	90 8 (0 6)	87 1 (0 7)	83.0 (0 9)	71 5 (1.0)	74 0 (1 3)
Glomerulonephritis	3,122	91 7 (0 5)	88 5 (0 6)	85 0 (0.7)	81 7 (0 8)	77 1 (1 0)
Hypertension	1,301	90 4 (0 8)	86 8 (1.0)	82.3 (1 2)	78 2 (1 4)	73 5 (1.9)
Polycystic kidney disease	575	93 8 (1 1)	90 9 (1.3)	88 5 (1.4)	85 4 (1 7)	84.3 (2 0)
Interstitial nephritis	559	91 6 (1 1)	88 5 (1 3)	85 3 (1 5)	83 0 (1 7)	76 7 (2 4)
Obstructive nephropathy	408	96 0 (1 2)	93 4 (1 4)	90 6 (1 6)	82.3 (2 2)	77 1 (2 9)
Other	1,294	91 4 (0 8)	88 1 (0 9)	83 0 (1 1)	77 4 (1 3)	71 7 (1 7)
Unknown	852	92 1 (0 9)	89 2 (1 1)	85.6 (1.3)	82 8 (1 5)	78 8 (2.0)
Not Reported	969	93 5 (0.8)	90 6 (1 0)	88 8 (1.1)	87.1 (1 [illegible])	84 7 (1 4)
Transplant number						
First transplant	10,513	91 9 (0 3)	88 5 (0 3)	84 8 (0 4)	81 4 (0 4)	76 8 (0 6)
Subsequent transplants	870	86 1 (1 1)	83 2 (1 3)	78 8 (1 4)	74 3 (1.7)	68 0 (2 2)

NOTES: Numbers in parentheses represent the standard error of the estimate for each value. Rates based on fewer than 30 observations are not displayed. Survival rates for individual sex, race, and primary diagnosis groups were age-adjusted to the age distribution of all living related donor transplant recipients.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, September 1996, 1990-94.

Hospital inpatient utilization

Data

This section presents information about the number of hospital stays, time spent in inpatient status, and average length of stays for Medicare ESRD beneficiaries. Medicare expenditures for inpatient services are presented in the next section, along with expenditures for other services.

The number and duration of hospitalizations billed to HCFA on behalf of Medicare ESRD beneficiaries are shown in Tables 45 through 51. The hospitalization data come from the Medicare Provider Analysis and Review (MEDPAR) files, which contain selected expenditure and medical information for each hospitalization. These hospitalization records were linked with personal identification records from the ESRD Program Management and Medical Information System (PMMIS). The number of hospital discharges and the total number of days hospitalized per year were calculated for each beneficiary.

The analysis was performed for calendar years 1989 through 1994 and includes all people who were alive, Medicare entitled, and ESRD at any time during the observation year. For each calendar year, patients were classified into one of four mutually exclusive treatment groups: (1) patients on dialysis for the entire calendar year (or that part of the year they were alive, Medicare entitled, and ESRD); (2) patients who received a kidney transplant during the year; (3) patients who had a functioning graft the entire part of the year they were alive and entitled; and (4) patients who experienced a graft failure, but did not have a transplant during that same calendar year.

Because many ESRD patients are entitled to Medicare prior to renal failure, some hospitalization records pre date the date of renal failure. For these analyses inpatient stays were included if the date of discharge occurred after the date of renal failure. That is, hospitalizations in which the initiation of dialysis occurred were included.

A qualification on these utilization data concerns the provisions of Medicare as a secondary payer. Beginning in 1981, Medicare became the secondary payer for care for ESRD patients in their first year of Medicare coverage if they have another insurance carrier and if they are entitled to Medicare solely because of ESRD (i.e., not because of disability and not because they are 65 years of age or over). In 1990, this was extended to 18 months. In 1993, the MSP provisions were amended to include

a. Any bill indicating any amount other than $0 for "primary payer" (i.e. payer other than Medicare).
b. A total amount of $0 for total part A and part B payments for persons designated as a dialysis patient.
c. A total amount of $0 for Medicare inpatient payment for persons designated as a transplant patient.

The first criteria uses a data field on MSP directly from the bills. The second two criteria are based on the unique characteristics of the ESRD population. Unlike most Medicare patients, ESRD patients should not have periods of time with no payments. Persons on dialysis are being treated at least three times a week and the payments should reflect that fact. Any person on dialysis with no payments for an entire calendar quarter either is not really on chronic dialysis or another payer is picking up the bill. Similarly, a transplant requires a hospitalization and accompanying expenditures The absence of such is strong evidence of MSP[1]. No attempt was made to exclude persons with a functioning graft based on expenditure levels. A person with a functioning graft could easily go a full quarter without incurring Medicare expenses.

Table 45 includes Medicare secondary payer (MSP) beneficiaries since the purpose is to show total Medicare covered hospitalizations. However, the per patient data in Tables 46 to 51 exclude Medicare secondary payer beneficiaries, so that these tables will have the best estimates of actual ESRD hospitalization rates.

Results

Table 45 shows the total Medicare covered hospitalization experience of the Medicare ESRD population from 1989 through 1994. The number of Medicare covered hospitalizations increased from 251,400 in 1989 to 381,500 in 1994, an average annual increase of 8.7 percent. During this same time, the total number of inpatient days increased from 2,406,700 to 3,156,800, an average annual increase of 5.6 percent. The higher rate of increase in hospitalizations (8.7 percent) compared to hospital days (5.6 percent) was due to a decrease in average length of stay, from 9.6 days in 1989 to 8.3 days in 1994. In 1994, dialysis patients accounted for 85.2 percent of all hospitalizations among ESRD beneficiaries (325,000). Transplant recipients and functioning graft patients together accounted for 13.2 percent of hospitalizations (21,500 and 29,000, respectively) while graft failure patients accounted for 1.6 percent of hospitalizations (6,000).

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[1] Another reason for the absence of reimbursements is enrollment in a Medicare risk HMO This method eliminates HMO enrollees as well as MSP persons.

Table 46 shows hospitalization rates (discharges per person and hospital days per person) by patient treatment group. Excluded from Table 46 are persons for whom Medicare was determined to be the secondary payer. Overall, hospitalization rates remained fairly constant over this 6 year period at about 1.5 hospitalizations per person. The average number of hospitalized days per person decreased from 14.2 in 1989 to 12.3 in 1994. Dialysis patients spent an average of 13.4 days in the hospital in 1994, less than the 1989 rate of 15.0 days. The average length of stay for dialysis patients decreased from 9.7 days in 1989 to 8.3 days in 1994. Transplant recipients were hospitalized an average of 2.7 times in 1994, down slightly from 2.8 in 1989. However, total days spent in the hospital declined by 6.4 days for transplant recipients, from 31.1 days to 24.7 days in 1989 and 1994, respectively. Persons with a functioning kidney graft had the lowest overall hospitalization rates. In 1994 they were hospitalized an average of 0.7 times per person, a rate which remained constant over the six year period. The total hospitalized days per functioning graft patient declined, from 5.8 days in 1989 to 4.9 days in 1994. Those persons whose grafts failed experienced the highest hospitalization rates of any treatment group. In each of the years shown, these persons averaged about 2.9 to 3.0 hospitalizations per person. The average length of stay declined from 1989 through 1994 (9.3 and 8.4 days respectively). Consequently, the total hospitalized days also declined from 1989 to 1994 (28.5 and 24.0 days, respectively).

Per capita discharges and inpatient days during 1994 by age, sex, race, and primary diagnosis for renal failure are shown in Tables 47 through 50. There is a separate table for each of the four treatment groups: dialysis, transplant, functioning graft, and graft failure. To examine utilization, it is necessary to adjust for varying lengths of entitlement periods for patients during the year. That is, the data should be annualized for patients who become ESRD during the year and those who die during the year, because their records would not reflect a full year's utilization. For this reason, Tables 47 through 50 display both unadjusted and annualized data for the average number of days during the year that people in each group were ESRD and Medicare entitled. The annualized values are estimated by a linear extrapolation of the basic per capita figures to a full year (365 days) of coverage. Annualization is most important for the age groups and primary diagnosis classifications since, in general, older people and persons with diabetes have the fewest numbers of days at risk. Unless otherwise stated, and except for average lengths of stay, all results are based on annualized values.

Inpatient utilization for dialysis patients during 1994 is shown in Table 47. On an annualized basis, the average dialysis patient was hospitalized twice for a total of 17.0 days. The number of days hospitalized and the average length of stay during the year increased with age. For example, average length of stay increased from 6.5 days per stay for patients under 15 years of age to 9.1 for those over 75 years of age. On an annualized basis, persons over age 75 had over twice as many hospital days (23.3) as did persons ages 15 to 24 (9.9). On average, women were hospitalized more often than were men (2.2 and 1.9 discharges, respectively). Women also experienced 2.7 more inpatient days per year per person than did men (18.4 and 15.7, respectively). The lowest hospitalization rates were experienced by Asians (1.3 discharges per person). The other three racial groups averaged about 2 hospitalizations per person. Total hospital days per person ranged from a high of 17.8 days for white beneficiaries to 11.2 days for Asian beneficiaries. Patients whose renal failure was attributed to diabetes experienced the highest annualized average hospitalization rate for the year at 2.4 discharges per person. The lowest average number of hospitalizations was for those persons with polycystic kidney disease at 1.5 discharges per person. These two groups also experienced the highest number of hospital days per patient for the year (21.3 days for diabetes) and the lowest (10.9 days for polycystic kidney disease).

Table 48 shows hospitalization rates by demographic group for transplant recipients. There was less age effect on hospitalization rates among transplant recipients than among dialysis patients (see Table 47). Patients under 15 years of age had the highest number of discharges per patient (3.4 discharges) and the highest number of days per patient (31.5 days). The other age groups all averaged 2.8 to 3.0 hospitalizations and about 25 inpatient days. There were no major differences in utilization between males and females. Asian persons had the lowest utilization rates with 2.3 discharges and 20.2 hospital days. Patients whose primary diagnosis was diabetes had more inpatient days (27.4 days), and were hospitalized more often (3.0 discharges), than any other diagnosis group.

Functioning graft patients, as shown in Table 49, had the lowest use of inpatient services with 0.7 discharges (less than 1 per person per year), 5.2 total inpatient days, and an average length of stay of 7.6 Days of hospitalization increased with age, from 3.1 for those persons 15 to 24 years of age to 7.5 for those 65 to 74 years of age. This age effect was due predominantly to longer average lengths of stay which ranged from 5.9 days for those under age 15 to 8.5 for those 65 to 74 years of age. Length of stay was longer for males (7.8 days) than for females (7.4 days). However, females were hospitalized slightly more often than were males (0.7 and 0.6 stays per person per year). The hospitalization rate (0.3 stays per person) and days of care rate (2.4 days per person) were less than one half as great for Asian beneficiaries as for the other racial groups. Total hospital days were about 5 days for white beneficiaries and about 6 days for both black and American Indian beneficiaries. Those patients whose renal failure was attributed to diabetes were hospitalized about twice as frequently (1.1 stays per person) for about twice as many days (9.2 days per person) as other beneficiaries. Total days for other diagnostic groups ranged from 3.5 days per person for beneficiaries whose renal failure was attributed to glomerulonephritis to 4.9 days for hypertensive beneficiaries.

Inpatient utilization for graft failure patients is shown in Table 50. Persons experiencing a graft failure had the highest number of hospitalizations (3.2 discharges per person) of any treatment group. Persons ages 45 to 54 years had the most discharges (3.5) in this treatment category.

Total inpatient days ranged from 20.5 days for persons ages 15 to 24 to 32.3 days for persons ages 45 to 54. Females experienced about 4 more total days of hospitalization per person for the year than did males (29.2 and 25.0, respectively), mostly due to more frequent hospitalizations. The three racial groups for which there were sufficient numbers of persons averaged between 25 and 27 inpatient days per person. Persons with diabetes as their primary diagnosis had 4.4 hospitalizations per year and an average length of stay of 8.8 days. Consequently, this group also experienced the most total hospital days per person for the year (38.1). Total hospital days for the other diagnostic groups ranged from 20.9 days for those with glomerulonephritis to 29.4 for those whose renal failure was attributed to interstitial nephritis.

Table 51 presents diagnostic-specific hospitalization rates for the 1994 Medicare dialysis population. The information in this table is based on the same data as shown in Table 47. For example, the annualized hospitalization rate for all dialysis patients shown in Table 47 is 2.0 discharges per person. Because more detail is shown in Table 51, the rates are expressed in annualized discharges per 100 persons. So the 204 discharges per 100 persons in Table 51 is the same as the 2.0 discharges per person shown in Table 47.

Hospitalizations were categorized according to the principal diagnosis listed on the MEDPAR bill files. Diagnoses are coded using the International Classification of Diseases, (Ninth Revision) with Clinical Modification (ICD-9-CM). For the most part, hospitalizations were categorized according to broad ICD-9-CM categories, such as Diseases of the Circulatory System, encompassing codes 390 through 459. An exception was made for diagnoses specifically related to complications of vascular access.

Because vascular access revisions often are ancillary to the primary purpose of a hospital stay, merely counting all vascular procedures will overstate the amount of hospitalization due to vascular access. Therefore, vascular access hospitalizations were based on two sets of criteria.[2] First, all hospitalizations were classified as vascular access if the principal diagnosis was one of three codes as listed below:

ICD9 Code	**Description**
996.1	Mechanical Complications of Other Vascular Device, Implant, and Graft
996.62	Infection and Inflammatory Reaction due to Internal Prosthetic Device, Implant, and Graft
996.73	Other Complications of Internal Prosthetic Device, Implant, and Graft

The second criterion set was based on a combination of diagnosis related group and first listed procedures. Hospitalizations were categorized as vascular access if they met both of the following criteria:

(1) DRG Code	**Description**
112	Percutaneous Cardiovascular Procedures

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[2] This category does not represent all the vascular access procedures that are performed for dialysis patients. Some vascular access revisions and repairs are done on an outpatient basis.

(1) DRG Code	Description
120	Other Circulatory System Operating Room Procedures
315	Other Kidney/Urinary Operating Room Procedures
442/443	Other Operating Room Procedures for Injuries
478/479	Other Vascular Procedures

and,

(2) ICD9 Code	Procedure Description
39.27	Creation, AV fistula
39.29	Creation, other vascular shunt
39.42	Revision AV shunt
39.43	Removal AV shunt
39.49	Other revision, vascular
39.53	Repair of AV fistula
39.59	Other repair
39.93	Insertion vessel-vessel cannula
39.94	Replacement vessel-vessel cannula

All hospitalizations not meeting the definitions above for vascular access were categorized according to the principal diagnosis as follows:

Category	Codes
Diseases of the Circulatory System	390-459
Diseases of the Digestive System	520-579
Diseases of the Genitourinary System	580-629
Endocrine, Nutritional, and Metabolic Diseases, and Immunity Disorders	240-279
Diseases of the Respiratory System	416-519
Infectious and Parasitic Diseases	001-139
Symptoms, Signs, Ill defined Conditions	780-799
All Other	All other codes

The most common cause of hospitalization were circulatory diseases (50 per 100 persons) and vascular access (48 per 100), together accounting for about one-half of all hospitalizations. These were followed by digestive system diseases (19 per 100 persons), and endocrine, nutritional, and metabolic diseases (18 per 100 persons).

Circulatory disease hospitalizations increased with age, rising from 18 discharges per 100 persons for persons under age 15 to 69 discharges per 100 persons for persons over age 75 There were notable differences in circulatory disease hospitalization by race as well, ranging from a low of 34 per 100 persons among Asian beneficiaries to a high of 54 per 100 persons for white beneficiaries Relatively high rates of circulatory hospitalization occurred for persons whose renal failure was attributed to hypertension and diabetes (58 and 57 discharges per 100 persons, respectively) while relatively low rates occurred for persons whose renal failure was attributed to polycystic kidney disease and obstructive nephropathy (31 and 32 discharges per 100 persons, respectively). Much of the difference in circulatory hospitalization by cause of renal failure and race is probably due to the age difference in these groups.

Hospitalization rates for vascular access generally increased with age, from 34 per 100 persons ages 15 to 24, to 66 per 100 for persons over age 75. Females had higher rates of vascular access (52 per 100) than did males (44 per 100). By racial category, hospitalization for vascular access ranged from 33 per 100 among Asian beneficiaries to 52 per 100 among black beneficiaries. Among diagnostic groups, the highest rate was for persons whose renal failure was attributed to diabetes (56 per 100 persons) while the lowest rates were for persons whose renal failure was attributed to polycystic kidney disease (34 per 100 persons) and glomerulonephritis (37 per 100 persons).

Hospitalizations for endocrine, nutritional and metabolic diseases and immunity disorders were largely due to diabetes and related complications. Consequently, persons whose renal failure was attributed to diabetes had a hospitalization rate for this category which was three to four times as great as for other causes of renal failure. Similarly, groups with a higher percent of diabetic patients, such as female and American Indian beneficiaries had higher hospitalization rates in this category.

Table 45
Medicare end stage renal disease program inpatient hospital utilization by patient treatment group: 1989-94

	1989	1990	1991	1992	1993	1994	Average annual percent change
Total							
Number of patients	181,189	198,273	218,128	239,646	258,896	279,282	9.0
Discharges in thousands	251.4	277.2	305.1	337.1	346.7	381.5	8.7
Days in thousands	2,406.7	2,648.6	2,851.0	3,109.8	3,033.2	3,156.8	5.6
Average length of stay	9.6	9.6	9.3	9.2	8.7	8.3	-2.9
Dialysis							
Number of patients	143,446	156,853	174,006	191,572	206,507	222,252	9.2
Discharges in thousands	206.8	228.9	256.6	286.6	294.5	325.0	9.5
Days in thousands	1,974.6	2,182.4	2,401.4	2,655.6	2,584.7	2,694.2	6.4
Average length of stay	9.5	9.5	9.4	9.3	8.8	8.[illegible]	-2.8
Transplant							
Number of patients	8,093	8,895	9,203	9,277	9,907	10,174	4.7
Discharges in thousands	18.7	20.9	20.5	20.3	20.5	21.5	2.9
Days in thousands	208.7	226.7	210.5	206.8	197.0	193.7	-1.5
Average length of stay	11.2	10.9	10.3	10.2	9.6	9.0	-4.2
Functioning Graft							
Number of patients	27,788	30,636	32,888	36,652	40,166	44,578	9.9
Discharges in thousands	19.4	21.2	22.2	24.3	25.8	29.0	8.3
Days in thousands	165.4	182.1	184.9	194.4	198.6	219.4	5.8
Average length of stay	8.5	8.6	8.3	8.0	7.7	7.6	-2.3
Graft Failure							
Number of patients	1,862	1,889	2,031	2,145	2,316	2,278	4.1
Discharges in thousands	5.5	5.2	5.8	6.0	5.9	6.0	1.7
Days in thousands	52.3	49.8	54.2	53.1	53.0	49.6	-1.1
Average length of stay	9.5	9.7	9.3	8.9	9.0	8.3	-2.7

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, and the Medicare Provider Analysis and Review files, September 1996 update, 1989-94.

Table 46

Medicare end stage renal disease program inpatient hospital utilization by patient treatment group, excluding Medicare secondary payer patients: 1989-94

	1989	1990	1991	1992	1993	1994	Average annual percent change
Total							
Number of patients	132,714	145,636	190,090	206,173	224,695	239,170	12.5
Discharges per patient	1.47	1.48	1.49	1.51	1.45	1.48	0.2
Days per patient	14.16	14.22	14.02	13.97	12.70	12.31	-2.8
Average length of stay	9.6	9.6	9.4	9.3	8.8	8.3	-2.9
Dialysis							
Number of patients	101,799	111,411	151,579	164,869	179,619	190,147	13.3
Discharges per patients	1.55	1.57	1.60	1.62	1.56	1.60	0.7
Days per patient	14.97	15.09	15.00	15.12	13.69	13.35	-2.3
Average length of stay	9.7	9.6	9.4	9.3	8.8	8.3	-2.9
Transplant							
Number of patients	3,767	4,350	6,006	5,778	6,092	6,408	11.2
Discharges per patient	2.81	2.85	2.77	2.75	2.75	2.72	-0.6
Days per patient	31.06	30.58	28.54	28.30	26.81	24.74	-4.4
Average length of stay	11.1	10.7	10.3	10.3	9.8	9.1	-3.9
Functioning Graft							
Number of patients	25,522	28,258	30,755	33,708	37,030	40,702	9.8
Discharges per patient	0.68	0.67	0.66	0.65	0.64	0.65	-1.1
Days per patient	5.81	5.79	5.52	5.24	4.95	4.93	-3.3
Average length of stay	8.5	8.6	8.4	8.0	7.8	7.6	-2.2
Graft Failure							
Number of patients	1,626	1,617	1,750	1,818	1,954	1,913	3.3
Discharges per patient	3.06	2.87	3.05	2.98	2.74	2.87	-1.3
Days per patient	28.49	27.59	28.10	26.33	24.47	24.02	-3.4
Average length of stay	9.3	9.6	9.2	8.8	8.9	8.4	-2.1

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, and the Medicare Provider Analysis and Review files, September 1996 update, 1989-94.

Table 47

Medicare end-stage renal disease inpatient utilization for dialysis patients by age, sex, race, and primary diagnosis, excluding Medicare secondary payer patients: 1994

Age, sex, race and primary diagnosis	Number of patients	Number of days	Discharges per patient	Days per patient	Average length of stay	Annualized discharges per patient	Annualized days per patient
Total	190,147	287	1.6	13.4	8.3	2.0	17.0
Age							
Under 15 years	1,587	339	1.6	10.1	6.5	1.7	10.9
15-24 years	6,406	337	1.4	9.1	6.6	1.5	9.9
25-34 years	13,879	323	1.6	11.6	7.2	1.8	13.1
35-44 years	20,133	316	1.6	11.8	7.5	1.8	13.6
45-54 years	26,356	306	1.6	12.5	8.0	1.9	14.9
55-64 years	38,573	295	1.6	13.0	8.4	1.9	16.1
65-74 years	53,664	269	1.7	14.6	8.8	2.3	19.8
75 years or over	29,549	238	1.7	15.2	9.1	2.6	23.3
Sex							
Male	97,423	287	1.5	12.3	8.1	1.9	15.7
Female	92,724	286	1.7	14.4	8.5	2.2	18.4
Race							
Asian	4,033	294	1.1	9.0	8.5	1.3	11.2
Black	67,862	302	1.6	13.5	8.2	2.0	16.4
White	112,315	277	1.6	13.5	8.4	2.1	17.8
American Indian	2,451	299	1.7	12.4	7.4	2.0	15.2
Other/unknown	3,486	283	1.3	10.2	7.8	1.7	13.2
Primary diagnosis							
Diabetes	60,591	273	1.8	16.0	8.7	2.4	21.3
Glomerulonephritis	23,428	309	1.4	10.5	7.5	1.6	12.3
Hypertension	56,831	282	1.6	12.9	8.1	2.0	16.6
Polycystic kidney disease	5,307	326	1.3	9.8	7.5	1.5	10.9
Interstitial nephritis	5,687	298	1.5	12.5	8.2	1.9	15.3
Obstructive nephropathy	3,842	298	1.4	12.3	8.6	1.8	15.0
Other	11,579	278	1.6	13.9	8.6	2.1	18.2
Unknown	10,108	300	1.5	12.2	8.3	1.8	14.8
Not Reported	12,774	302	1.4	11.1	8.2	1.6	13.4

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, and the Medicare Provider Analysis and Review files, September 1996 update, 1994.

Table 48

Medicare end-stage renal disease inpatient utilization for transplant patients by age, sex, race, and primary diagnosis, excluding Medicare secondary payer patients: 1994

Age, sex, race and primary diagnosis	Number of patients	Number of days	Discharges per patient	Days per patient	Average length of stay	Annualized discharges per patient	Annualized days per patient
Total	6,408	347	2.7	24.7	9.1	2.9	26.0
Age							
Under 15 years	305	348	3.2	30.1	9.4	3.4	31.5
15-24 years	828	348	2.7	23.2	8.6	2.8	24.3
25-34 years	1,461	347	2.8	24.4	8.6	3.0	25.7
35-44 years	1,540	352	2.7	24.5	9.2	2.8	25.4
45-54 years	1,269	346	2.6	25.1	9.6	2.8	26.5
55-64 years	738	346	2.7	25.1	9.3	2.8	26.5
65-74 years	254	334	2.6	23.9	9.2	2.9	26.2
75 years or over	13	—	—	—	—	—	—
Sex							
Male	3,885	347	2.7	24.6	9.1	2.8	25.9
Female	2,523	347	2.8	24.9	9.0	2.9	26.2
Race							
Asian	199	355	2.2	19.6	8.8	2.3	20.2
Black	1,790	354	2.8	26.2	9.5	2.9	27.0
White	4,224	344	2.7	24.4	8.9	2.9	25.8
American Indian	90	350	2.9	25.7	8.9	3.0	26.8
Other/unknown	105	334	2.5	24.1	9.5	2.8	26.4
Primary diagnosis							
Diabetes	2,734	346	2.9	26.0	9.1	3.0	27.4
Glomerulonephritis	1,501	350	2.7	23.4	8.8	2.8	24.4
Hypertension	451	353	2.6	23.0	9.0	2.7	23.8
Polycystic kidney disease	358	350	2.5	22.7	9.1	2.6	23.6
Interstitial nephritis	217	346	2.5	22.4	9.0	2.6	23.6
Obstructive nephropathy	131	341	2.4	24.0	9.8	2.6	25.6
Other	36	354	2.8	26.8	9.5	2.9	27.6
Unknown	396	335	2.6	25.1	9.8	2.8	27.4
Not Reported	584	348	2.8	25.4	9.1	2.9	26.6

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, and the Medicare Provider Analysis and Review files, September 1995 update, 1994.

Table 49

Medicare end stage renal disease inpatient utilization for functioning graft patients by age, sex, race, and primary diagnosis, excluding Medicare secondary payer patients: 1994

Age, sex, race and primary diagnosis	Number of patients	Number of days	Discharges per patient	Days per patient	Average length of stay	Annualized discharges per patient	Annualized days per patient
Total	40,702	349	0.6	4.9	7.6	0.7	5.2
Age							
Under 15 years	1,864	338	0.6	3.3	5.9	0.6	3.6
15-24 years	5,532	351	0.5	3.0	6.2	0.5	3.1
25-34 years	10,336	352	0.6	4.5	7.2	0.6	4.7
35-44 years	9,842	348	0.7	5.0	7.7	0.7	5.3
45-54 years	7,689	347	0.7	5.9	8.4	0.7	6.2
55-64 years	4,568	349	0.8	6.7	8.5	0.8	7.0
65-74 years	833	349	0.8	7.1	8.5	0.9	7.5
75 years or over	38	340	0.7	3.8	5.5	0.7	4.1
Sex							
Male	24,815	349	0.6	4.8	7.8	0.6	5.0
Female	15,887	348	0.7	5.1	7.4	0.7	5.3
Race							
Asian	1,065	349	0.3	2.3	6.9	0.3	2.4
Black	7,550	352	0.7	5.8	7.9	0.8	6.0
White	31,236	348	0.6	4.8	7.6	0.7	5.1
American Indian	455	349	0.7	5.8	8.3	0.7	6.1
Other/unknown	396	350	0.5	3.2	6.9	0.5	3.3
Primary diagnosis							
Diabetes	8,443	349	1.1	8.8	8.2	1.1	9.2
Glomerulonephritis	10,507	350	0.5	3.4	7.0	0.5	3.5
Hypertension	5,589	351	0.6	4.8	7.6	0.6	4.9
Polycystic kidney disease	3,025	348	0.5	3.7	7.4	0.5	3.9
Interstitial nephritis	1,772	349	0.5	3.5	7.3	0.5	3.7
Obstructive nephropathy	1,091	347	0.6	4.2	7.6	0.6	4.4
Other	3,179	347	0.5	3.6	6.6	0.6	3.8
Unknown	2,896	349	0.5	4.0	7.6	0.6	4.2
Not Reported	4,200	348	0.6	4.5	8.0	0.6	4.8

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, and the Medicare Provider Analysis and Review files, September 1996 update, 1994.

Table 50

Medicare end stage renal disease inpatient utilization for graft failure patients by age, sex, race, and primary diagnosis, excluding Medicare secondary payer patients: 1994

Age, sex, race and primary diagnosis	Number of patients	Number of days	Discharges per patient	Days per patient	Average length of stay	Annualized discharges per patient	Annualized days per patient
Total	1,913	329	2.9	24.0	8.4	3.2	26.7
Age							
Under 15 years	131	316	2.5	21.4	8.4	2.9	24.7
15-24 years	361	329	2.7	18.5	6.9	3.0	20.5
25-34 years	508	338	2.9	23.7	8.1	3.1	25.6
35-44 years	483	337	3.0	25.2	8.4	3.2	27.3
45-54 years	260	323	3.1	28.6	9.3	3.5	32.3
55-64 years	144	307	2.7	24.7	9.3	3.2	29.4
65-74 years	25	—	—	—	—	—	—
75 years or over	1	—	—	—	—	—	—
Sex							
Male	1,147	329	2.7	22.5	8.3	3.0	25.0
Female	766	329	3.1	26.3	8.4	3.5	29.2
Race							
Asian	40	353	2.5	25.5	10.3	2.6	26.4
Black	672	338	2.9	23.7	8.0	3.2	25.6
White	1,157	322	2.8	24.2	8.5	3.2	27.4
American Indian	25	—	—	—	—	—	—
Other/unknown	19	—	—	—	—	—	—
Primary diagnosis							
Diabetes	370	319	3.8	33.3	8.8	4.4	38.1
Glomerulonephritis	504	334	2.5	19.1	7.5	2.8	20.9
Hypertension	411	333	2.9	24.9	8.5	3.2	27.3
Polycystic kidney disease	78	335	2.7	24.8	9.3	2.9	27.1
Interstitial nephritis	79	331	2.9	26.7	9.2	3.2	29.4
Obstructive nephropathy	43	325	2.8	22.8	8.2	3.1	25.6
Other	201	328	2.6	19.5	7.6	2.9	21.8
Unknown	149	339	2.2	19.5	9.1	2.3	21.0
Not Reported	78	307	2.6	24.6	9.5	3.1	29.3

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, and the Medicare Provider Analysis and Review files, September 1996 update, 1994.

Table 51

Medicare end stage renal disease inpatient utilization, by principal diagnosis of hospitalization by age, sex, race, and primary diagnosis, for dialysis patients excluding Medicare secondary payer patients: 1994

Age, sex, race and primary diagnosis	Number of patients	All causes	Vascular access	Circular. diseases	Digestive diseases	Genitour. diseases	Endocrin/ metabolic	Respir. Disease	Infect. Diseases	All Others
		Hospitalizations per 100 persons (annualized)								
Total	190,147	204	48	50	19	9	18	14	9	38
Age										
Under 15 years	1,587	168	40	18	19	16	8	8	6	53
15-24 years	6,406	150	34	25	16	10	13	9	7	36
25-34 years	13,879	184	39	31	19	9	24	11	9	42
35-44 years	20,133	181	38	36	19	8	22	10	8	39
45-54 years	26,356	187	42	42	20	7	19	11	8	39
55-64 years	38,573	193	44	50	18	7	18	3	8	36
65-74 years	53,664	225	55	63	19	10	16	16	9	38
75 years or over	29,549	255	66	69	20	14	13	20	13	[illegible]
Sex										
Male	97,423	194	44	49	18	9	16	14	9	36
Female	92,724	215	52	51	20	9	19	14	9	41
Race										
Asian	4,033	131	33	34	9	5	10	10	6	23
Black	67,862	199	52	45	19	7	17	12	10	37
White	112,315	212	46	54	19	10	18	15	9	40
American Indian	2,451	204	44	38	16	9	27	17	10	45
Other/unknown	3,486	169	40	39	14	8	15	10	8	34
Primary diagnosis										
Diabetes	60.591	244	56	57	19	8	35	13	11	45
Glomerulonephritis	23.428	164	37	39	18	9	8	12	7	33
Hypertension	56.831	204	50	58	19	8		15	8	34
Polycystic kidney disease	5,307	145	34	31	18	8	7	8	7	32
Interstitial nephritis	5.687	188	45	38	21	12	9	14	9	40
Obstructive nephropathy	3,842	175	47	32	14	16	7	12	8	39
Other	11,579	213	43	42	21	14	10	17	14	51
Unknown	10,108	179	43	41	19	10	10	14	8	35
Not Reported	12,774	164	36	39	16	7	13	11	8	34

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, and the Medicare Provider Analysis and Review files, September 1996 update, 1994

Program expenditures

Data

Expenditures for this section were obtained from the Medicare National Claims History (NCH) files at HCFA. NCH is a system for linking Part A and Part B expenditure records by beneficiary for each calendar year. Records for ESRD beneficiaries in the ESRD Program Management and Medical Information System (PMMIS) were linked with NCH for this analysis. At the time of this data report, complete data were available for the years 1989 through 1994.

Program expenditures include Medicare payments for all medical services for which Medicare beneficiaries are eligible. These services include inpatient hospital care, outpatient services (mostly dialysis), physician services, skilled nursing care, home health care, and hospice. Dialysis services, for the most part, are paid for under the composite rate methodology, which is a prospective payment rate system for maintenance dialysis services regardless of whether the treatment was furnished in the facility or at the patient's home. There is a separate payment rate for hospital-based and independent dialysis facilities. The average composite rate for the years covered in this section was approximately $125 per dialysis session. Because outpatient dialysis is a Part B service, Medicare pays 80 percent of the composite rate, after a $100 per year deductible, with the beneficiary or other third party payer responsible for the remaining 20 percent. Also included in the outpatient billings are the costs of erythropoietin, a biologically engineered protein that stimulates bone marrow to produce new red blood cells. Erythropoietin is used to treat anemia associated with chronic renal failure. Most chronic renal failure patients are anemic because their kidneys are unable to produce sufficient amounts of erythropoietin. Medicare coverage of erythropoietin began in 1989. By 1994, almost all in center hemodialysis patients and most home patients were receiving erythropoietin. Erythropoietin accounted for about 20 percent of outpatient expenditures in 1994.

Patients who dialyze at home may select one of two methods for reimbursement of the cost of dialysis services. Under the Method I option, home dialysis supplies are obtained through the patient's dialysis facility which, in turn, bills the Medicare intermediary at the same composite rate as they bill for in-center dialysis. Dialysis expenditures for these patients appear in the outpatient category. Under Method II, the beneficiary obtains dialysis supplies directly from the supplier and then bills the Medicare carrier directly for those dialysis supplies. Dialysis expenditures for these persons appear in the physician/supplier category. In 1994, there were about 33,000 patients who dialyzed at home. Approximately 21,000 of these beneficiaries selected Method I for reimbursement and approximately 12,000 selected Method II.

Payments for physician care, which is deemed to be part of the routine care of dialysis patients, is based on a capitation rate methodology system known as the monthly capitation payment (MCP). During the years covered in this section the estimated average MCP payment was $180 per month. In addition, this section includes Medicare covered physician expenditures for all nondialysis related care. Prior to 1992, physician services were reimbursed under Medicare's usual, customary, and prevailing reimbursement system. Beginning in 1992, most physician services were covered under the Medicare Fee Schedule. Payment for hospital care is based on the prospective payment system, under which Medicare pays a predetermined amount per hospital stay, depending on the diagnosis and/or procedure associated with the stay. Medicare also pays for certain inpatient services on a "pass-through" basis. These services are averaged across all patients and added to the payment records. This is also done for kidney acquisition charges, which means that most kidney acquisition charges are allocated to non ESRD beneficiaries and are missing from the source files used in these analyses. For this report, kidney acquisition charges were taken directly from hospital cost reports and per transplant kidney acquisition was calculated based on total Medicare transplants. These amounts were then added to the payment amounts for each Medicare transplant recipient. In 1994, the average kidney acquisition payment was $25,013.

For each hospital episode, lasting until there is a 90-day break between stays, the patient is responsible for a deductible. This deductible is roughly equivalent to 1 day of a hospital stay. This amount was $400 in 1984; by 1994 it had risen to $696.

The NCH billing data were aggregated to calendar years per person. Within each year, bills were aggregated by hospital, outpatient, physician/supplier, home health, skilled nursing, and hospice categories. The descriptive tables shown in this section are based on all ESRD patients ever enrolled during each of the years 1989 through 1994. Beneficiary selection and analysis decisions were discussed in the previous chapter on hospitalization. Beneficiaries were grouped into four treatment categories. Beneficiaries for whom Medicare was not the primary payer were identified and not included in the tables showing per capita payments. Per capita payments were annualized to more accurately reflect the relative payment levels across demographic groupings. These procedures are described in more detail in the previous chapter. In addition, expenditures made by Medicare on behalf of ESRD beneficiaries enrolled in at risk HMOs are not included in these tables. In 1994 there were approximately 6,000 such beneficiaries.

Results

Medicare program expenditures for the years 1989 through 1994 by patient treatment group and by type of service are shown in Table 52. Total expenditures increased from $4,425.0 million in 1989 to $8,438.7 million in 1994, an average annual increase of 13.8 percent. The number of persons ever enrolled during each year increased from 181,189 in 1989 to 279,282 in 1994, an average annual increase of 9.0 percent. Dialysis accounted for both the majority of patients and the bulk of program expenditures. In 1989, dialysis patients accounted for 79.2 percent of all patients and 83.7 percent of all program expenditures. By 1994, dialysis patients accounted for 79.6 percent of all patients and 86.2 percent of all program expenditures. The next largest group, in terms of program expenditures, was persons receiving kidney transplants. In 1994, they accounted for 3.6 percent of all patients and 8.3 percent of all program expenditures. Persons with a functioning graft were the second largest treatment group, accounting for 16.0 percent of all beneficiaries in 1994. However, due to the fact that they were not on maintenance dialysis and that they were beyond the transplant year costs, they accounted for only 4.3 percent of program expenditures in 1994. Finally, previously transplanted patients experiencing a graft failure accounted for only 0.8 percent of patients and about 1.2 percent of program expenditures in 1994. In 1994, 42.1 percent of program expenditures ($3,554.6 million) were accounted for by inpatient hospital stays. Outpatient billings (most of which were for maintenance dialysis and erythropoietin) accounted for 34.0 percent of program expenditures ($2,872.4 million). Physician/supplier billings (which included some home dialysis expenditures) accounted for 19.7 percent of expenditures ($1,666.0 million).

Prior to 1991, no distinction was made between home health, skilled nursing, and hospice care. Payments for these services increased between 1991 and 1994 at an annual rate of over 50 percent. In 1994, these services accounted for 4.1 percent of total ESRD expenditures. Home health care expenditures were $221.7 million; skilled nursing facility expenditures were $116.2 million; and hospice expenditures were $7.8 million.

In 1994, the distribution of expenditures by type of service varied greatly by treatment category. Inpatient and outpatient expenditures were about the same for dialysis patients ($2,739.5 million and $2,733.8 million respectively), representing 75.3 percent of total dialysis expenditures. An additional $1,483.1 million, or 20.4 percent of dialysis patient expenditures, was due to physician/supplier billings. The other treatment categories were more heavily weighted toward inpatient stays. Inpatient stays accounted for 76.7 percent of the expenditures for transplant patients ($537.1 million), 61.0 percent of the costs of functioning graft patients ($222.4 million), and 56.5 percent of the costs of patients experiencing a graft failure ($55.6 million).

The annual expenditure data expressed in terms of expenditures per enrolled person (excluding MSP beneficiaries) is shown in Table 53. Overall, Medicare expenditures per enrolled ESRD beneficiary increased from $27,080 in 1989 to $33,638 in 1994, an average annual increase of

4.4 percent. For dialysis patients, expenditures in 1989 and 1994 were $30,204,and $37,044 respectively. Almost one-half of this increase was due to outpatient expenditure increases for erythropoietin. However, 21 percent of the increase was due to the combined categories of home health, skilled nursing and hospice care. In 1994, expenditures for these services totaled over $1,600 per dialysis patient. Per capita expenditures for transplant recipients increased from $75,792 in 1989 to $87,598 in 1994, a 2.9 percent annual rate of increase. Inpatient, outpatient, and physician expenditures all had rates of increase of less than 4 percent per year. Per capita expenditures were lowest for patients with a functioning graft. In 1989, expenditures for this group were $6,688, increasing to $8,515 by 1994, an average annual increase of 4.9 percent. This increase was due mostly to the 4.8 percent annual increase in inpatient expenditures. Patients experiencing a graft failure had expenditures of $39,654 in 1989 and $48,870 in 1994, an average annual increase of 4.3 percent. The largest increase occurred in the outpatient area, due to increased use of erythropoietin, as described above.

Tables 54, 55, 56, and 57 show per capita expenditures by age, sex, race, and primary cause of renal failure for the four treatment groups: dialysis, transplant, functioning graft, and graft failure, respectively. The average number of days of Medicare coverage by category in each subgroup (age, sex, race, and diagnosis) is shown in parentheses. The four tables show that the average days of coverage was 42 days less per year for dialysis patients than for the next lowest group, which was the graft failure patients (287 and 329, respectively). The days of coverage are used to annualize expenditure amounts, shown in the last column of each table. Unless otherwise noted, the following discussion will be based on the annualized expenditure figures.

Unadjusted expenditures for dialysis patients (Table 54) are largely unrelated to age, with all groups showing $34,000 to $38,000 per person. However, this understates the relative costs because the average number of days of coverage decreased with age. For example, persons in the youngest age group averaged 339 days of coverage in 1994 while persons 75 years of age and older averaged 238 days of coverage. When the expenditures are annualized, age effects become more evident. Estimated annual per capita expenditures ranged from a low of $37,041 among persons 15 to 24 years of age to a high of $57,579 among persons 75 years of age and older, a 55.4 percent difference Female beneficiaries had higher annual per capita expenditures than did male beneficiaries ($49.286 and $45.205 respectively) Among racial groups, annual expenditures per person ranged from a low of $41,327 for Asian persons to a high of $47,559 for white persons. Annualized per capita expenditures for black persons and American Indians were $47,266 and $44,403 respectively. Dialysis patients whose renal failure was attributed to diabetes had the highest expenditure level ($53,953), followed by persons whose renal failure was attributed to hypertension ($47,331). Persons with interstitial nephritis and obstructive nephropathy had annualized expenditure amounts of $44,736 and $42,978, respectively, while persons with glomerulonephritis and polycystic kidney disease had annualized expenditure amounts of $40,508 and $38,218, respectively.

Annualized expenditures for transplant recipients, by age (Table 55), ranged from a low of $89,453 for persons 15 to 24 years of age to a high of $95,479 for persons 65 to 74 years of age. Males had slightly higher annualized expenditure levels than did females ($92,271 and $91,942, respectively). Asian transplant recipients had the lowest ($83,861) and white transplant recipients had the highest ($92,766) annualized per capita expenditures. Among diagnostic categories, transplant recipients whose renal failure was attributed to diabetes had the highest average expenditures ($94,075). Expenditures for other diagnostic categories ranged from $88,000 to $90,000.

Average annualized expenditures for functioning graft patients (Table 56) ranged, by age, from a low of $5,794 for persons 15 to 24 years of age to a high of $13,098 for persons 65 to 74 years of age. There was little difference in annualized expenditures between male and female beneficiaries ($8,753 and $9,171, respectively). Black beneficiaries had the highest average annualized expenditures ($9,893), followed by white ($8,828), American Indians ($8,581), and Asian ($5,389) beneficiaries. Table 56 also shows that the average annualized expenditures per person for functioning graft patients was highest for patients whose renal failure was attributed to diabetic nephropathy ($14,959), about twice that of most other diagnostic categories. Persons whose renal failure was attributed to hypertension ($8,748) had the second highest expenditure levels. Per capita annualized expenditures were lowest for those whose renal failure was attributed to interstitial nephritis ($6,606), and glomerulonephritis ($6,385).

Among graft failure patients (Table 57), per capita annualized expenditures were about $50,000 for persons in the youngest two age groups and about $60,000 for the oldest two age groups. Female beneficiaries had average annualized expenditures which were $5,716 greater than male beneficiaries ($57,644 and $51,928 respectively). The $5,700 difference between males and females was largely due to higher hospitalization rates among females (see Table 50 in the hospitalization section). There was little difference among racial groups in annualized expenditures. Among diagnostic groups, the highest average per person annualized expenditures were those whose renal failure was attributed to diabetes ($66,265). Annualized expenditures for the other groups ranged from a low of $47,519 for glomerulonephritis to a high of $59,826 for obstructive nephropathy.

Table 58 shows Medicare program expenditure rates for dialysis patients by State of residence. It is based on the same selection criteria used in Table 54. That is, it shows average expenditure amounts for persons on dialysis for whom Medicare is the primary payer.

Overall, average Medicare expenditures for non-Medicare secondary payer dialysis patients in 1994 was $37,044. On an annualized basis, this amounted to $47,112 per person. This varied considerably by State. States with average annualized expenditure amounts over $55,000 included Massachusetts ($58,756), Connecticut ($57,281), and Pennsylvania ($57,984). Among the 51 States and the District of Columbia, the lowest average expenditure rates were found in Wyoming ($33,239), Utah ($35,823), Montana ($36,723), and Idaho ($36,774).

Table 52
Medicare end stage renal disease program expenditures, by patient treatment group: 1989-94

Treatment Group	1989	1990	1991	1992	1993	1994	Percent distribution 1994	Average annual percent change 1989-94
				Expenditures in millons				
Total								
Number of persons	181,189	198,273	218,128	239,646	258,896	279,282	100.0	9.0
Expenditures								
Total	$4,425.0	$5,141.8	$5,936.3	$6,760.4	$7,562.5	$8,438.7	100.0	13.8
Inpatient	2,006.9	2,286.1	2,618.6	2,991.1	3,208.5	3,554.6	42.1	12.1
Outpatient	1,420.4	1,723.1	1,948.7	2,210.6	2,592.7	2,872.4	34.0	15.1
Physician/Supplier	974.7	1,092.5	1,267.5	1,396.0	1,522.0	1,666.0	19.7	11.3
Home Health	24.5	43.0	66.2	105.7	157.5	221.7	2.6	55.3
Skilled Nursing	—	—	33.2	53.0	76.2	116.2	1.4	51.8
Hospice	—	—	2.1	4.0	5.6	7.8	0.1	55.2
Dialysis								
Number of persons	143,446	156,853	174,006	191,572	206,507	222,252	79.6	9.2
Expenditures								
Total	3,703.4	4,308.6	5,040.6	5,811.8	6,509.9	7,275.5	100.0	14.5
Inpatient	1,501.5	1,700.2	1,983.7	2,315.1	2,464.7	2,739.5	37.7	12.8
Outpatient	1,331.3	1,618.6	1,843.0	2,100.1	2,467.0	2,733.8	37.6	15.5
Physician/Supplier	850.5	955.1	1,121.1	1,246.8	1,357.8	1,483.1	20.4	11.8
Home Health	21.5	37.9	59.0	95.0	141.7	200.1	2.8	56.2
Skilled Nursing	—	—	31.8	51.0	73.3	111.5	1.5	52.0
Hospice	—	—	2.0	3.9	5.4	7.5	0.1	55.4
Transplant								
Number of persons	8,093	8,895	9,203	9,277	9,907	10,174	3.6	4.7
Expenditures								
Total	466.9	555.1	571.8	586.1	647.1	700.1	100.0	8.4
Inpatient	351.2	420.6	436.6	453.9	498.1	537.1	76.7	8.9
Outpatient	50.8	62.2	61.8	61.3	70.2	76.0	10.9	8.4
Physician/Supplier	64.2	71.1	71.5	68.5	74.7	81.3	11.6	4.8
Home Health	0.7	1.2	1.7	2.2	3.7	5.0	0.7	48.0
Skilled Nursing	—	—	0.2	0.2	0.4	0.6	0.1	49.5
Hospice	—	—	*	*	*	*	*	—
Functioning Graft								
Number of persons	27,788	30,636	32,888	36,652	40,166	44,578	16.0	9.9
Expenditures								
Total	185.4	211.3	241.3	276.0	311.9	364.8	100.0	14.5
Inpatient	113.5	128.4	148.7	170.4	191.0	222.4	61.0	14.4
Outpatient	23.4	25.8	27.2	30.8	34.4	38.7	10.6	10.6
Physician/Supplier	46.3	53.4	59.2	65.4	73.0	84.8	23.2	12.8
Home Health	2.1	3.7	5.0	7.7	11.0	15.1	4.1	47.9
Skilled Nursing	—	—	1.1	1.5	2.2	3.5	1.0	48.6
Hospice	—	—	0.1	0.1	0.2	0.3	0.1	50.9

see footnote at end of table

Table 52-Continued
Medicare end stage renal disease program expenditures, patient treatment group: 1989-94

Treatment Group	1989	1990	1991	1992	1993	1994	Percent distribution 1994	Average annual percent change 1989-94
				Expenditures in millions				
Graft Failure								
Number of persons	1,862	1,889	2,031	2,145	2,316	2,278	*	4.1
Expenditures								
Total	71.8	69.5	82.7	86.6	93.6	98.3	100.0	6.5
Inpatient	42.3	39.3	49.6	51.8	54.6	55.6	56.5	5.6
Outpatient	15.0	16.4	16.6	18.3	21.2	23.8	24.2	9.6
Physician/Supplier	14.2	13.5	15.8	15.4	16.4	16.9	17.1	3.5
Home Health	0.3	0.3	0.5	0.8	1.1	1.5	1.5	42.7
Skilled Nursing	—	—	0.2	0.3	0.3	0.5	0.5	42.3
Hospice	—	—	*	*	*	*	*	27.1

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System 1989-1994, and the National Claims History update, September 1996.

* less than 0.1 percent

Table 53

Medicare end stage renal disease program expenditures per patient, by patient treatment group, excluding Medicare secondary payer patients: 1989-94

Treatment Group	1989	1990	1991	1992	1993	1994	Average annual percent change 1989-94
			Expenditures per person				
Total							
Number of persons	132,714	145,636	190,090	206,173	224,695	239,170	12.5
Expenditures (per person)							
Total	$27,080	$28,792	$29,932	$31,133	$32,239	$33,638	4.4
Inpatient	12,018	12,552	12,969	13,537	13,433	13,934	3.0
Outpatient	8,894	9,823	10,013	10,353	11,237	11,646	5.5
Physician/Supplier	6,020	6,182	6,432	6,479	6,530	6,663	2.1
Home Health	157	251	338	495	684	893	38.2
Skilled Nursing	—	—	170	249	331	470	40.3
Hospice	—	—	11	19	25	32	43.8
Dialysis							
Number of persons	101,799	111,411	151,579	164,869	179,619	190,147	13.3
Expenditures (per person)							
Total	30,204	32,166	32,416	34,025	35,315	37,044	4.2
Inpatient	12,183	12,648	12,735	13,532	13,360	13,933	2.7
Outpatient	10,925	12,118	11,906	12,330	13,415	13,981	5.1
Physician/Supplier	6,929	7,135	7,180	7,281	7,339	7,510	1.6
Home Health	179	288	378	558	772	1,014	38.9
Skilled Nursing	—	—	204	300	399	568	40.6
Hospice	—	—	13	23	29	39	44.3
Transplant							
Number of persons	3,767	4,350	6,006	5,778	6,092	6,408	11.2
Expenditures (per person)							
Total	75,792	81,301	78,028	80,602	84,657	87,598	2.9
Inpatient	56,518	61,174	57,743	60,430	63,183	65,286	2.9
Outpatient	8,877	9,684	9,426	9,550	10,259	10,560	3.5
Physician/Supplier	10,274	10,251	10,568	10,240	10,607	10,946	1.3
Home Health	124	193	265	352	549	720	39.6
Skilled Nursing	—	—	25	29	59	83	48.5
Hospice	—	—	*	*	*	*	—
Functioning Graft							
Number of persons	25,522	28,258	30,755	33,708	37,030	40,702	9.8
Expenditures (per person)							
Total	6,688	6,876	7,464	7,766	8,023	8,515	4.9
Inpatient	4,113	4,195	4,596	4,799	4,918	5,199	4.8
Outpatient	828	825	852	871	887	907	1.8
Physician/Supplier	1,669	1,734	1,824	1,832	1,866	1,961	3.3
Home Health	78	122	155	217	288	358	32.3
Skilled Nursing	—	—	34	43	58	82	34.4
Hospice	—	—	3	4	6	8	36.5

see footnotes at end of table

Table 53-Continued

Medicare end stage renal disease program expenditures per patient, by patient treatment group, excluding Medicare secondary payer patients[1]: 1989-94

Treatment Group	1989	1990	1991	1992	1993	1994	Average annual percent change 1989-94
			Expenditures per person				
Graft Failure							
Number of persons	1,626	1,617	1,750	1,818	1,954	1,913	3.3
Expenditures (per person)							
Total	39,654	39,224	44,587	44,866	44,986	48,870	4.3
Inpatient	23,337	22,247	26,706	26,980	26,362	27,897	3.6
Outpatient	8,380	9,294	9,032	9,393	10,200	11,677	6.9
Physician/Supplier	7,794	7,525	8,441	7,921	7,752	8,270	1.2
Home Health	145	160	304	393	520	756	35.5
Skilled Nursing	—	—	97	165	147	261	38.8
Hospice	—	—	6	14	5	9	13.4

[1] Patients for whom Medicare was a secondary payer were not included in this table. See discussion of MSP status in the Hospital inpatient utilization methods section.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, 1989-1994, and the National Claims History files update, September 1996.

Table 54

Medicare end stage renal disease program expenditures for dialysis patients by age, sex, race, and primary diagnosis, excluding Medicare secondary payer patients[1]: 1994

Age, sex, race and primary diagnosis	Number of persons [2]	Expenditures per person					
		Inpatient	Outpatient	Physician/ Supplier	Other [3]	Total	Annualized
Total	190,147 (287)	$13,933	$13,981	$7,510	$1,621	$37,044	$47,112
Age							
Under 15 years	1,587 (339)	12,901	15,235	7,144	154	35,435	38,139
15-24 years	6,406 (337)	10,974	16,584	6,360	271	34,189	37,041
25-34 years	13,879 (323)	13,081	15,577	6,915	628	36,200	40,907
35-44 years	20,133 (316)	12,724	15,144	6,890	816	35,572	41,088
45-54 years	26,356 (306)	13,296	14,841	7,305	1,186	36,628	43,690
55-64 years	38,573 (295)	13,268	14,228	7,374	1,551	36,421	45,063
65-74 years	53,664 (269)	15,084	13,349	7,999	2,113	38.5	52,301
75 years or over	29,549 (238)	15,200	11,863	7,950	2,596	37,610	57,579
Sex							
Male	97,423 (287)	13,381	13,660	7,184	1,320	35,545	45,205
Female	92,724 (286)	14,513	14,318	7,852	1,937	38,619	49,286
Race							
Asian	4,033 (294)	10,629	15,258	6,322	1,078	33,288	41,327
Black	67,862 (302)	14,542	15,524	7,603	1,440	39,108	47,266
White	112,315 (277)	13,758	13,011	7,551	1,774	36,093	47,559
American Indian	2,451 (299)	13,447	14,906	6,605	1,415	36,374	44,403
Other/unknown	3,486 (283)	11,893	13,054	6,346	1,033	32,326	41,693
Primary diagnosis							
Diabetes	60,591 (273)	15,739	13,790	8,393	2,469	40,391	53,953
Glomerulonephritis	23,428 (309)	11,613	15,151	6,723	806	34,293	40,508
Hypertension	56,831 (282)	13,786	14,012	7,319	1,451	36,568	47,331
Polycystic kidney disease	5,307 (326)	10,656	15,615	7,067	796	34,134	38,218
Interstitial nephritis	5,687 (298)	13,041	14,677	7,512	1,293	36,524	44,736
Obstructive nephropathy	3,842 (298)	12,582	14,215	7,107	1,186	35,089	42,978
Other	11,579 (278)	15,166	12,292	7,140	1,143	35,742	46,927
Unknown	10,108 (300)	13,042	14,427	7,051	1,248	35,768	43,518
Not Reported	12,774 (302)	12,024	12,719	6,610	1,202	32,555	39,346

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[1] Patients for whom Medicare was a Medicare secondary payer were not included in this table. See discussion of MSP status in the Hospital inpatient utilization methods section.

[2] Average number of days of Medicare coverage shown in parentheses.

[3] Other includes skilled nursing facility, home health services and hospice.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy. Data from the Program Management and Medical Information System, and the National Claims History files update, September 1996

Table 55

Medicare end stage renal disease program expenditures for transplant patients by age, sex, race, and primary diagnosis, excluding Medicare secondary payer patients[1]: 1994

Age, sex, race and primary diagnosis	Number of persons[2]		Expenditures per person Inpatient	Outpatient	Physician/ Supplier	Other[3]	Total	Annualized
All Persons	6,408	(347)	$65,286	$10,560	$10,946	$806	$87,598	$92,142
Age								
Under 15 years	305	(348)	72,740	10,166	11,615	508	95,029	99,662
15-24 years	828	(348)	63,793	10,582	10,534	363	85,272	89,453
25-34 years	1,461	(347)	65,152	10,992	11,005	617	87,767	92,320
35-44 years	1,540	(352)	64,917	10,492	10,898	856	87,163	90,382
45-54 years	1,269	(346)	64,973	10,335	11,045	870	87,222	92,012
55-64 years	738	(346)	65,800	10,327	10,815	1,380	88,322	93,172
65-74 years	254	(334)	64,195	10,731	11,331	1,113	87,370	95,479
75 years or over	13	—	—	—	—	—	—	—
Sex								
Male	3,885	(347)	65,594	10,555	10,843	729	87,721	92,271
Female	2,523	(347)	64,811	10,569	11,105	924	87,408	91,942
Race								
Asian	199	(355)	60,247	10,848	10,097	371	81,563	83,861
Black	1,790	(354)	66,163	10,989	10,670	855	88,677	91,433
White	4,224	(344)	65,100	10,380	11,140	809	87,429	92,766
American Indian	90	(350)	66,091	9,562	9,793	850	86,297	89,995
Other/unknown	105	(334)	66,656	10,800	10,456	632	88,545	96,763
Primary diagnosis								
Diabetes	2,734	(346)	66,226	10,648	11,216	1,195	89,285	94,075
Glomerulonephritis	1,501	(350)	64,344	10,486	10,882	475	86,187	89,881
Hypertension	451	(353)	63,921	10,810	10,618	546	85,896	88,816
Polycystic kidney disease	358	(350)	63,626	10,165	10,517	448	84,756	88,388
Interstitial nephritis	217	(346)	62,934	10,543	10,860	499	84,837	89,496
Obstructive nephropathy	131	(341)	64,441	9,698	10,131	253	84,523	90,472
Other	36	(354)	67,080	10,342	11,735	1,360	90,518	93,331
Unknown	396	(335)	66,140	10,244	10,540	754	87,678	95,530
Not Reported	584	(348)	65,749	10,815	10,807	490	87,861	92,153

[1] Patients for whom Medicare was a secondary payer were not included in this table. See discussion of Medicare Secondary Payer in the Hospital inpatient utilization methods section.

[2] Average number of days of Medicare coverage shown in parentheses.

[3] Other includes skilled nursing facility, home health services and hospice.

NOTE: Rates based on fewer than 30 observations are not displayed.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, and the National Claims History files update, September 1996.

Table 56

Medicare end stage renal disease program expenditures for functioning graft patients, by age, sex, race, and primary diagnosis, excluding Medicare secondary payer patients[1]:1994

Age, sex, race, and primary diagnosis	Number of persons [2]	Expenditures per person: Inpatient	Outpatient	Physician/ supplier	Other [3]	Total	Annualized
Total	40,702 (349)	$5,199	$907	$1,961	$448	$8,515	$8,905
Age							
Under 15 years	1,864 (338)	3,796	892	1,030	71	5,790	6,249
15-24 years	5,532 (351)	3,430	752	1,280	116	5,579	5,794
25-34 years	10,336 (352)	4,798	879	1,772	337	7,785	8,073
35-44 years	9,842 (348)	5,269	896	1,981	461	8,607	9,027
45-54 years	7,689 (347)	6,189	963	2,336	652	10,141	10,667
55-64 years	4,568 (349)	6,655	1,046	2,695	783	11,178	11,690
65-74 years	833 (349)	7,127	1,164	3,216	1,018	12,524	13,098
75 years or over	38 (340)	4,331	855	1,645	812	7,644	8,211
Sex							
Male	24,815 (349)	5,157	882	1,929	401	8,369	8,753
Female	15,887 (348)	5,264	946	2,011	523	8,744	9,171
Race							
Asian	1,065 (349)	3,037	648	1,333	135	5,153	5,389
Black	7,550 (352)	6,065	986	1,941	550	9,541	9,893
White	31,236 (348)	5,081	900	1,999	438	8,417	8,828
American Indian	455 (349)	5,426	822	1,529	426	8,205	8,581
Other/unknown	396 (350)	3,520	721	1,550	272	6,065	6,325
Primary Diagnosis							
Diabetes	8,443 (349)	8,787	1,216	3,139	1,164	14,306	14,959
Glomerulonephritis	10,507 (350)	3,696	782	1,489	157	6,123	6,385
Hypertension	5,589 (351)	5,065	974	1,994	379	8,412	8,748
Polycystic kidney disease	3,025 (348)	3,842	806	1,712	214	6,573	6,894
Interstitial nephritis	1,772 (349)	3,743	773	1,591	209	6,316	6,606
Obstructive nephropathy	1,091 (347)	4,122	824	1,517	230	6,692	7,039
Other	3,179 (347)	4,054	892	1,543	198	6,687	7,034
Unknown	2,896 (349)	4,583	814	1,605	269	7,270	7,603
Not Reported	4,200 (348)	5,085	737	1,747	472	8,041	8,434

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[1] Patients for whom Medicare was a secondary payer were not included in this table. See discussion of Medicare Secondary Payer status in the Hospital inpatient utilization methods section.

[2] Average number of days of Medicare coverage shown in parentheses.

[3] Other includes skilled nursing facility, home health services and hospice

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy. Data from the Program Management and Medical Information System, and the National Claims History files update, September 1996.

Table 57

Medicare end stage renal disease program expenditures for graft failure patients, by age, sex, race, and primary diagnosis, excluding Medicare secondary payer patients[1]: 1994

Age, sex, race and primary diagnosis	Number of persons [2]		Expenditures per person: Inpatient	Outpatient	Physician/ Supplier	Other [3]	Total	Annualized
Total	1,913	(329)	$27,897	$11,677	$8,270	$1,026	$48,870	$54,217
Age								
Under 15 years	131	(316)	25,226	11,681	7,023	298	44,229	$51,107
15-24 years	361	(329)	24,932	12,285	7,287	359	44,863	$49,763
25-34 years	508	(338)	27,080	12,082	8,451	867	48,480	$52,353
35-44 years	483	(337)	28,563	11,748	8,513	912	49,737	$53,869
45-54 years	260	(323)	32,496	10,742	8,623	2,153	54,014	$61,037
55-64 years	144	(307)	27,572	10,362	9,203	1,736	48,873	$58,106
65-74 years	25	—	—	—	—	—	—	—
75 years or over	1	—	—	—	—	—	—	—
Sex								
Male	1,147	(329)	26,193	11,781	7,890	942	46,806	$51,928
Female	766	(329)	30,448	11,522	8,839	1,150	51,959	$57,644
Race								
Asian	40	(353)	30,376	11,699	9,932	1,734	53,741	$55,568
Black	672	(338)	28,842	12,157	7,620	852	49,471	$53,423
White	1,157	(322)	27,200	11,388	8,594	1,110	48,292	$54,741
American Indian	25	—	—	—	—	—	—	—
Other/unknown	19	—	—	—	—	—	—	—
Primary diagnosis								
Diabetes	370	(319)	34,532	10,363	10,287	2,698	57,880	$66,265
Glomerulonephritis	504	(334)	23,318	12,446	7,331	389	43,483	$47,519
Hypertension	411	(333)	29,993	11,739	8,302	843	50,876	$55,765
Polycystic kidney disease	78	(335)	30,341	12,323	7,680	1,084	51,428	$56,033
Interstitial nephritis	79	(331)	29,837	11,397	8,584	718	50,536	$55,727
Obstructive nephropathy	43	(325)	32,474	12,051	7,984	761	53,270	$59,826
Other	201	(328)	24,422	11,116	7,462	327	43,327	$48,214
Unknown	149	(339)	21,686	12,387	8,137	747	42,958	$46,253
Not Reported	78	(307)	28,846	12,138	7,378	904	49,265	$58,572

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[1] Patients for whom Medicare was a secondary payer were not included in this table. See discussion of Medicare Secondary Payer status in the Hospital inpatient utilization methods section.

[2] Average number of days of Medicare coverage shown in parentheses

[3] Other includes skilled nursing facility, home health services and hospice.

Rates based on fewer that 30 observances, not displayed.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, and the National Claims History files update, September 1996

Table 58

Medicare end stage renal disease program expenditures by State for dialysis patients, excluding Medicare secondary payor patients: 1994

State	Number of persons 2	Expenditures per person					
		Inpatient	Outpatient	Physician/ Supplier	Other	*Total	Annualized
United States	190,147 (287)	$13,933	$13,981	$7,510	$1,621	$37,044	$47,112
Alabama	3,889 (29[illegible])	13,069	13,681	7,717	1,101	35,5[illegible]	44,308
Alaska	113 (269)	12,594	15,063	5,190	934	33,782	45,838
Arizona	2,926 (287)	12,846	13,282	7,631	1,723	35,482	45,125
Arkansas	1,798 (279)	12,077	12,284	6,666	1,490	32,517	42,540
California	19,527 (286)	14,828	15,029	7,162	2,124	39,143	49,955
Colorado	1,625 (297)	11,951	14,064	5,802	1,860	33,677	41,388
Connecticut	2,297 (284)	16,771	14,687	10,287	2,824	44,569	57,281
Delaware	638 (291)	15,521	12,583	9,524	1,003	38,631	48,455
District of Columbia	1,160 (300)	20,022	14,271	8,022	926	43,242	52,611
Florida	11,637 (281)	12,347	13,561	8,405	2,324	36,636	47,588
Georgia	6,700 (296)	13,138	13,332	7,462	1,204	35,136	43,326
Hawaii	909 (289)	13,364	13,643	5,463	853	33,323	42,086
Idaho	457 (284)	8,216	14,221	4,323	1,853	28,6[illegible]	36,774
Illinois	8,750 (281)	14,858	13,546	6,976	1,446	36,827	47,836
Indiana	3,686 (2[illegible])	12,454	14,261	5,993	1,685	34,393	44,202
Iowa	1,555 (277)	9,739	14,436	4,682	1,154	30,012	39,546
Kansas	1,448 (289)	11,926	13,905	6,234	1,355	33,419	42,207
Kentucky	2,288 (276)	12,320	12,087	8,047	1,385	33,840	44,752
Lousiana	4,655 (288)	14,994	13,447	7,970	2,769	39,181	49,656
Maine	499 (286)	14,081	11,963	7,247	1,537	34,728	44,321
Maryland	4,129 (292)	17,463	15,294	8,652	1,027	42,436	53,045
Massachusetts	3,723 (281)	17,096	14,169	11,074	2,894	45,234	58,756
Michigan	6,773 (287)	13,021	14,690	6,533	1,223	35,468	45,107
Minnesota	2,057 (285)	14,106	14,759	4,650	1,387	34,904	44,702
Mississippi	3,058 (298)	10,272	14,077	7,293	1,264	32,906	40,304
Missouri	3,829 (281)	12,684	13,835	6,783	1,839	35,141	45,646
Montana	370 (281)	9,097	14,383	3,865	926	28,272	36,723
Nebraska	833 (287)	9,414	12,817	5,844	1,165	29,240	37,187
Nevada	733 (268)	11,523	11,852	6,720	1,736	31,830	43,351
New Hampshire	464 (282)	13,537	11,350	7,403	1,797	34,088	44,121
New Jersey	6,826 (281)	17,375	13,061	8,880	831	40,148	52,150
New Mexico	1,166 (301)	10,961	12,633	6,457	1,068	31,119	37,736
New York	13,858 (288)	18,165	14,941	8,268	1,135	42,509	53,874
North Carolina	6,604 (291)	12,208	13,705	6,813	1,072	33,798	42,393
North Dakota	348 (259)	9,071	12,239	4,059	1,379	26,748	37,695
Ohio	7,32[illegible] (284)	13,625	13,903	7,127	1,586	36,242	46,579
Oklahoma	1,996 (281)	11,914	12,928	5,883	2,236	32,961	42,814
Oregon	1,461 (285)	9,653	14,806	5,353	1,643	31,456	40,286
Pennsylvania	9,330 (280)	18,475	13,974	10,502	1,530	44,481	57,984
Puerto Rico	2,749 (289)	5,520	11,934	8,130	310	25,895	32,705
Rhode Island	716 (285)	13,753	13,313	8,811	1,909	37,786	48,393
South Carolina	3,846 (289)	11,412	14,842	6,847	1,077	34,178	43,166
South Dakota	364 (291)	11,111	15,066	4,298	968	31,444	39,440
Tennessee	4,024 (290)	12,345	13,445	7,008	1,947	34,744	43,730
Texas	14,322 (293)	12,959	14,126	7,479	2,311	36,875	45,936
Utah	553 (287)	9,212	12,435	4,286	2,236	28,168	35,823
Vermont	220 (274)	12,848	13,386	5,340	1,634	33,208	44,237
Virginia	5,218 (290)	12,560	14,263	6,804	1,013	34,639	43,597
Washington	2,320 (287)	11,499	14,823	4,988	1,620	32,931	41,881
West Virginia	1,107 (267)	15,020	11,564	7,709	1,165	35,457	48,471
Wisconsin	2,715 (282)	11,322	13,055	5,631	1,382	31,391	40,630
Wyoming	138 (321)	8,093	12,463	6,179	2,496	29,232	33,239
Other	415 (290)	8,475	12,014	3,941	397	24,827	31,290

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, September 1996 update, 1989-1994

Providers of renal care

This section discusses the growth in the number of participating renal providers furnishing some form of service to end stage renal disease (ESRD) patients. For the purpose of this report, the following definitions apply. "Dialysis facility" refers to all providers approved by Medicare to furnish at least one type of dialysis service. A "dialysis center" is a hospital-based unit which, in addition to providing dialysis service(s), is also approved to furnish the full spectrum of diagnostic, therapeutic, and rehabilitative services. The term "transplant center" includes all hospitals approved to do kidney transplants. The term "renal provider" encompasses all of the units described above. Please note that the number of Medicare renal providers reported in Tables 59, 60, and 61 does not equal the total number of surveyed Medicare renal providers reported in Tables 23 through 37. A complete explanation of this difference may be found on page 22 of this report.

Growth in numbers and types of renal providers

Since the Medicare ESRD program began in 1973, the total number of Medicare-approved renal providers has more than quadrupled from 606 in 1973 (not shown) to 2,863 in December 1995 (Table 59). During the 1987 to 1993 time frame, the increase in total numbers of renal providers has remained relatively constant at about 6.7 percent annually.

The increase in the number of dialysis facilities has been attributable primarily to the increase in the number of freestanding facilities; i.e., facilities not affiliated with hospitals. In 1973 there were only 68 freestanding facilities, which represented approximately 11 percent of the total number of Medicare-approved dialysis facilities in operation at that time. At the end of 1995, there were 2,000 free-standing dialysis facilities, which represented 69.9 percent of the total. Rates of increase for freestanding dialysis facilities calculated from the data in Table 60 show that the increase in 1992 was 8.6 percent; in 1993 was 10.1 percent; in 1994 was 9.1 percent; and in 1995 was 11.4 percent. In 1991, proprietary renal providers accounted for 54.1 percent of the total (Table 60). By 1995, this had increased to 61.4 percent of the total. The clear trend is that, while the number of providers in both groups is increasing each year, the number of proprietary organizations is increasing at a much faster rate.

Type of renal care provided

In 1995, 11,902 renal transplants were reported in Medicare-approved transplant centers (see Table 35). ESRD patient who do not receive kidney transplants receive dialysis care either at home or at one of the 2,747 dialysis facilities, as displayed in the Treatment Trends section of this report. These facilities may be in either a hospital setting (of which there were 244 dialysis facilities and 503 dialysis centers at the end of 1995), or an independent facility setting (of which there were 2,000 at the end of 1995). At the end of 1995, 163 of the 503 dialysis centers noted above were in hospitals that also had approved transplant centers. Finally, 43 other dialysis centers are defined as inpatient centers because they provide backup dialysis services only, and 20 percent or less of their dialysis service is provided on an outpatient basis. (These 43 centers are not included in the 2,747 outpatient dialysis providers described above.)

Table 59

Approved end stage renal disease providers of service by type of service and number of approved dialysis stations: 1986-95

Year	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Total providers	1,578	1,701	1,819	1,938	2,072	2,202	2,344	2,506	2,640	2,863
Transplant hospitals										
Transplant center only	34	39	41	53	53	60	65	64	68	73
Transplant/dialysis centers	149	160	161	165	169	168	165	170	168	163
Other hospitals/satellites										
Inpatient care only	45	42	44	55	51	58	57	61	46	43
Dialysis centers	353	351	349	332	332	333	345	342	337	340
Dialysis facilities	136	149	158	169	186	207	217	223	226	244
Non-hospitals										
Dialysis facilities	861	960	1,066	1,164	1,281	1,376	1,495	1,646	1,795	2,000
Total approved										
Outpatient stations	19,383	21,246	22,605	22,654	25.052	28,812	30,455	35,267	37,771	41,085

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, 1986-95.

Table 60

Number and percent of approved end stage renal disease providers, by type of ownership: 1991-95

	1991		1992		1993		1994		1995	
Type of ownership	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total	2,202	100.0	2,344	100.00	2,506	100.00	2,640	100.00	2,863	100.00
Proprietary	1,191	54.1	1,300	55.5	1,444	57.6	1,566	59.3	1,757	61.4
Hospital-based	32	1.5	32	1.4	35	1.4	36	1.3	37	1.3
Freestanding	1,159	52.6	1,268	54.1	1,409	56.2	1,530	58.0	1,720	60.1
Nonprofit	1,011	45.9	1,044	44.5	1,062	42.4	1,074	40.7	1,106	38.6
Hospital-based	794	36.1	817	34.8	825	32.9	809	30.7	826	28.9
Freestanding	217	9.9	227	9.7	237	9.5	265	10.0	280	9.7

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, 1990-1995.

Table 61
Approved end stage renal disease providers of service, and number of dialysis stations, by State: December 1995

State	Total providers of service	Hospital transplant centers	Outpatient dialysis facilities Total	Hospital	Freestanding	Hospital dialysis centers	Inpatient dialysis stations total	Approved facilities training in self-dialysis
Total	2,863	236	2,747	747	2,000	43	41,085	1,726
Alabama	63	2	62	5	57	1	[illegible]	34
Alaska	2	0	2	0	2	0	26	1
Arizona	65	3	62	7	55	1	790	34
Arkansas	41	3	40	10	30	1	527	25
California	290	24	276	43	233	0	4 203	196
Colorado	21	4	19	5	14	0	264	15
Connecticut	24	2	23	14	9	0	300	22
Delaware	9	1	8	2	6	1	112	7
District of Columbia	22	4	22	7	15	0	297	11
Florida	184	7	180	18	162	4	2,974	119
Georgia	114	4	112	15	97	0	1,926	63
Hawaii	14	1	14	9	5	0	190	2
Idaho	8	0	8	5	3	0	33	3
Illinois	107	8	105	34	71	1	1,527	70
Indiana	45	2	44	14	30	1	[illegible]	34
Iowa	21	3	20	16	4	0	269	18
Kansas	25	2	24	1	23	0	336	8
Kentucky	35	3	33	5	28	0	488	20
Louisiana	88	8	82	9	73	1	1,166	37
Maine	7	1	6	3	3	0	65	5
Maryland	70	4	68	10	58	1	947	49
Massachusetts	56	10	54	20	34	0	709	40
Michigan	77	9	75	32	43	0	1,083	55
Minnesota	49	4	47	26	21	0	482	13
Mississippi	48	1	48	1	47	0	807	13
Missouri	66	11	62	23	39	2	855	43
Montana	9	0	9	7	2	0	77	5
Nebraska	20	3	15	9	6	3	144	10
Nevada	7	2	6	2	4	0	135	4
New Hampshire	6	1	6	2	4	0	65	6
New Jersey	61	3	61	31	30	0	1,046	44
New Mexico	24	2	22	8	14	0	254	16
New York	140	15	139	89	50	0	2,065	94
North Carolina	91	5	89	9	80	2	1,656	47
North Dakota	12	3	11	10	1	0	85	5
Ohio	83	12	83	38	45	0	1,035	59
Oklahoma	49	7	47	19	28	0	576	19
Oregon	29	1	29	13	16	0	309	17
Pennsylvania	154	13	137	36	101	16	2,099	114
Puerto Rico	30	1	28	11	17	2	511	20
Rhode Island	10	0	10	2	8	0	176	7
South Carolina	57	1	55	2	53	2	974	24
South Dakota	13	1	12	7	5	0	93	4
Tennessee	77	8	71	5	66	0	1,147	29
Texas	218	18	206	24	182	2	3,841	121
Utah	16	2	15	8	7	0	137	9
Vermont	2	1	2	2	0	0	22	1
Virgin Islands	2	0	2	2	0	0	18	1
Virginia	94	6	93	22	71	0	1,263	63
Washington	31	5	28	13	15	0	395	19
West Virginia	18	2	18	10	8	0	233	14
Wisconsin	50	3	48	28	20	2	554	35
Wyoming	5	0	5	2	3	0	29	1
American Samoa	1	0	1	1	0	0	9	0
Guam	2	0	2	1	1	0	12	1
Mariana Islands	1	0	1	0	1	0	5	0

Categories do not add to total because some hospital transplant centers also provide outpatient services and are counted again in that category. See Table 56 for a recap of the total in which categories do not overlap.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy. Data from the Program Management and Medical Information System, 1990-1995

End stage renal disease studies

Centers for Disease Control and Prevention Survey

The Centers for Disease Control (CDC) and Prevention annually surveys dialysis facilities using their Form 53.7, "National Surveillance of Dialysis-Associated Diseases." The CDC form is mailed by the Health Care Financing Administration to Medicare dialysis facilities along with the HCFA-2744, End Stage Renal Disease Facility Survey. As CDC surveys are received, they are forwarded to CDC for appropriate analyses.

Following is an explanation of the contents of the report entitled, "National Surveillance of Dialysis-Associated Diseases in the United States, 1995."

National Surveillance of Dialysis-Associated Diseases in the United States, 1995

by Jerome I. Tokars, M.D., M.P.H., Elaine Miller, R.N., M.P.H., Miriam J. Alter, Ph.D., and Matthew J. Arduino, Dr. PH

In conjunction with the annual facility survey performed by the Health Care Financing Administration (HCFA) for calendar year 1995, the Centers for Disease Control and Prevention (CDC) distributed by mail a questionnaire to all 2,762 chronic hemodialysis centers approved by HCFA. Information was collected on:

- The use of specific hemodialysis practices (e.g., high flux dialysis, bicarbonate dialysate, and reuse of disposable equipment).
- The incidence and prevalence of hepatitis B virus (HBV) infection, the prevalence of antibody to hepatitis B surface antigen (anti-HBs), the use of hepatitis B vaccine, and the incidence of non-A non-B hepatitis, in patients and staff.
- The occurrence of other hemodialysis-associated complications and diseases (e.g., pyrogenic reactions, new dialyzer syndrome).
- The number of patients with human immunodeficiency virus (HIV) infection and policies for testing of patients for HIV.

The reported incidence and prevalence of (HBV) infection among patients and staff was measured by using hepatitis B surface antigen (HBsAg) and anti-HBs as markers. Incidence was defined as the percentage of all patients or staff present in the facility for at least 1 month in 1995 who become positive for HBsAg during 1995. Prevalence was defined as the percentage of all patients or staff percent in the facility during the first week of December 1995 who were positive for HBsAg or for anti-HBs.

Data were analyzed with the chi square or Fisher's exact test for differences in proportions. When adjustment for confounding variables was required, the Mantel-Haenszel test or stepwise logistic regression was used. A P-value of less than 0.05 was considered significant.

Questionnaires were returned by 2,647 centers, a response rate of 96 percent. These centers represented 224,954 patients and 54,194 staff members. Approximately 50 percent of facilities were recontacted for clarification of data. The percentage of centers that reported reuse of disposable dialyzers continued to increase and in 1995, 77 percent of the centers reported that they reused disposable dialyzers. Ninety-nine percent of centers used bicarbonate as their primary method of dialysis in 1995 (compared with 22 percent in 1986) and 50 percent of centers reported treating patients with high flux dialysis. The reported incidence of HBV infection was 0.06 percent among patient and 0.02 percent among staff members. Receipt of three doses of hepatitis B vaccine was reported for 35 percent of patients and 82 percent of staff members. Pyrogenic reactions in the absence of septicemia were reported by 20 percent of centers. HIV infection was reported in 1.4 percent of patients, and AIDS in 0.7 percent of patients.

At the end of 1995, 65 percent of patients were treated with an arteriovenous graft, 22 percent with an arteriovenous fistula, and 13 percent with a temporary or permanent central catheter. The prevalence of anti-HCV was 10.4 percent among patients and 2.0 percent among staff. Treatment of 1 or more patient with vancomycin-resistant enterococci (VRE) was reported by 11.5 percent of centers, more commonly by hospital (vs freestanding); nonprofit or government (vs for profit) centers;

and centers in certain geographic areas. Vancomycin was received by 7.2 percent of patients in December 1995. The percentage of centers reporting patients with other pathogens was 40 percent for methicillin-resistant Staphylococcus aureus (MRSA), 7.9 percent for active tuberculosis, and 39 percent for human immunodeficiency virus (HIV). Please refer any questions or requests for this report to: Investigation and Prevention Branch (Hospital Infections Program) or Hepatitis Branch (Division of Rickettsail Diseases), National Center for Infectious Diseases, Centers for Disease Control and Prevention, Atlanta, Georgia 30333.

Health Care Financing Administration grant activity summaries

The Health Care Financing Administration is presently involved in many research activities that deal with or touch on the end stage renal disease program. These activities range from internal HCFA reviews to full-scope extramural studies that are covered under the grant or cooperative agreement process. Summaries of these activities follow.

ESRD Managed-Care Demonstration: Health Options

Project No.:	95-C-90692/4
Period:	September 1996-September 2000
Funding:	Waiver only Project
Award:	Cooperative Agreement
Principal Investigator:	Bruce Davidson, SVP
Awardee:	Health Options, Inc. 532 Riverside Avenue P.O. Box 60729 Jacksonville, FL 32236-0729
HCFA Project Officer:	Michael Kendix, Ph.D. Division of Health Information and Outcomes
Mandates:	Section 13567(b) of the Omnibus Budget Reconciliation Act of 1993 (Public Law 103-66)

Description: At present, end stage renal disease (ESRD) patients cannot enroll in health maintenance organizations under Medicare contracts, but may remain in if they develop ESRD after enrollment. The current ESRD capitation payment is State-specific, but unadjusted, and based on 95 percent of fee-for-service costs. Under the demonstration, rates will be paid on the basis of treatment status (maintenance dialysis, transplant episode, or functioning graft), and adjusted for patient age and whether diabetes was the cause of kidney failure. Demonstration rates are based on 100 percent of fee-for-service costs, and additional non-Medicare-covered benefits are to be provided.

The demonstration will test whether:

- Year-round open enrollment of Medicare's ESRD patients in managed care is feasible.
- Integrated acute and chronic care services, and case management for ESRD patients, improves health outcomes.
- Capitation rates reflecting patients' treatment needs increases the probability of kidney transplant.
- The additional benefits are cost effective.

Health Options currently has 271 ESRD patients enrolled under its Medicare risk contract, and there are 4,788 ESRD patients eligible for the demonstration in the service area of Dade, Broward, and Palm Beach counties. Health Options intends to expand its contractual relationships with renal providers. The nephrologist will function as the primary care physician and will employ a nurse practitioner for the case-management team. The additional benefits include health education and promotion, including a diabetes management program; prescription drugs; nutritional supplements; transportation to dialysis; rehabilitation; and nursing home dialysis services. Out-of-area dialysis will be covered for up to 30 days per year.

Status: The project is beginning a 1-year planning and development period that is to be followed by 3 years of service delivery.

ESRD Managed-Care Demonstration: Kaiser Foundation Health Plan, Southern California

Project No.:	95-C-90695/9
Period:	September 1996-September 2000
Funding:	$ 175,000
Award:	Cooperative Agreement
Principal Investigator:	Melodi Shapiro

Awardee: Kaiser Foundation Health Plan, Inc.
393 East Walnut Street
Pasadena, CA 91188
HCFA Project Officer: Bonnie M. Edington
Division of Health Information and Outcomes
Mandates: Section 13567(b) of the Omnibus Reconciliation Act of 1993 (Public Law 103-66)

Description: At present, end stage renal disease (ESRD) patients cannot enroll in health maintenance organizations under Medicare contracts, but may remain in if they develop ESRD after enrollment. The current ESRD capitation payment is State-specific, but unadjusted, and based on 95 percent of fee-for-service costs. Under the demonstration, rates will be paid on the basis of treatment status (maintenance dialysis, transplant episode, or functioning graft), and adjusted for patient age and whether diabetes was the cause of kidney failure. Demonstration rates are based on 100 percent of fee-for-service costs, and additional non-Medicare-covered benefits are to be provided.

The demonstration will test whether:

- Year-round open enrollment of Medicare's ESRD patients in managed care is feasible.
- Integrated acute and chronic care services, and case management for ESRD patients, improves health outcomes.
- Capitation rates reflecting patients' treatment needs increases the probability of kidney transplant.
- The additional benefits are cost effective.

Kaiser's proposed service area is Los Angeles, Orange, Riverside, San Bernardino, and San Diego Counties, in which there are approximately 13,000 ESRD patients; 2,000 are currently enrolled in Kaiser's Medicare risk contract. Kaiser currently has 1 hemodialysis and 6 peritoneal dialysis units, and contracts with 120 nephrologists, 112 dialysis facilities, and 3 transplant facilities. Under the demonstration, Kaiser will build on its register nurse case management model, integrating a diabetes education coordinator into the team, and may credential dialysis providers, potentially using a 450-indicator assessment tool.

Additional benefits include intensive case management; enhanced health education and family supportive services, particularly for diabetics, nutritional supplements, and 60 days out-of-area dialysis during travel.

Status: The project is beginning a 1-year planning and development period that is to be followed by 3 years of service delivery.

ESRD Managed-Care Demonstration: Phoenix Healthcare of Tennessee

Project No.: 95-C-90696/4
Period: September 1996-September 2000
Funding: $ 150,000
Award: Cooperative Agreement
Principal Investigator: Susan Cooper, R.N.
Awardee: Phoenix Healthcare of Tennessee
3401 West End Avenue, Suite 470
Nashville, TN 37203-1069
HCFA Project Officer: Michael Kendix, Ph.D.
Division of Health Information and Outcomes
Mandates: Section 13567(b) of the Omnibus Reconciliation Act of 1993 (Public Law 103-66)

Description: At present, end stage renal disease (ESRD) patients cannot enroll in health maintenance organizations (HMOs) under Medicare contracts, but may remain in if they develop ESRD after enrollment. The current ESRD capitation payment is State-specific, but unadjusted, and based on 95 percent of fee-for-service costs. Under the demonstration, rates will be paid on the basis of treatment status (maintenance dialysis, transplant episode, or functioning graft), and adjusted for patient age and whether diabetes was the cause of kidney failure. Demonstration rates are based on 100 percent of fee-for-service costs, and additional non-Medicare-covered benefits are to be provided.

The demonstration will test whether:

- Year-round open enrollment of Medicare's ESRD patients in managed care is feasible.
- Integrated acute and chronic care services, and case management for ESRD patients, improves health outcomes.
- Capitation rates reflecting patients' treatment needs increases the probability of kidney transplant.
- The additional benefits are cost effective.

Phoenix Healthcare of Tennessee is a State-licensed HMO contracting with TennCare, Tennessee's Medicaid-waivered health care reform demonstration project. Current enrollment consists of approximately 42,000 TennCare and 500 commercial members. Under the demonstration, Phoenix will be closely partnered with Nephrology Associates, a 14-member physician group, and will contract with Gambro Healthcare and Dialysis Clinics, Inc. (DCI) for the provision of outcome dialysis services and home dialysis training. Gambro and DCI operate 18 outpatient dialysis facilities in the service area. The service area consists of 40 counties surrounding Nashville, an area containing approximately 1,400 ESRD patients. Nephrology Associates serves approximately 60 percent of these patients.

The nephrologist will be the primary care physician under the demonstration, and will be supported by a team of nurse case managers, dietitians, and social workers employed by Nephrology Associates. The additional benefits offered will include an introductory home visit; preventive health services, including diagnostic tests, immunizations, and health education and counseling; transportation to dialysis; nutritional supplements; and some prescription and over-the-counter drugs.

Status: The project is beginning a 1-year planning and development period that is to be followed by 3 years of service delivery.

Medicare End Stage Renal Disease (ESRD) Capitation Demonstration: Technical Assistance Contract

Project No.: 500-94-0043DO02
Period: September 1994-September 1997
Funding: $ 499,444
Award: Delivery Order in Master Contract
Principal Investigator: Stanley Wallack, Ph.D.
Awardee: Brandeis University
Heller Graduate School
Institute for Health Policy
415 South Street
P.O. Box 9110
Waltham, MA 02254-9110
HCFA Project Officer: Bonnie M. Edington
Division of Health Information and Outcomes

Description: The Omnibus Budget Reconciliation Act of 1993 extended the social health maintenance organization (SHMO) demonstrations and authorized an end stage renal disease (ESRD) SHMO demonstration. The purpose of this contract is to assist the Health Care Financing Administration (HCFA) in development and implementing the ESRD Managed-Care Demonstration authorized through that legislation. The contractor also has a subcontract with Boston University for these purposes. A separate procurement action will award a contract to evaluate the demonstration.

Under the technical assistance contract, an announcement of the demonstration was sent to all dialysis and kidney transplant facilities, all health maintenance organizations with a Medicare contract, and all insurance companies with a Medicare contract, in October 1995. The *Federal Register* Notice for the ESRD Managed-Care Demonstration was published January 26, 1996, the Request for Proposal (RFP) was mailed to all requesters on February 29, and proposals were received by May 17.

Status: Awards were made September 24 to three organizations: Health Options in Florida, Kaiser Foundation Health Plan, Southern California; and Phoenix Healthcare of Tennessee. The contractor will work with HCFA in making site visits and providing technical assistance to the sites during the 1-year planning and development phase, before service delivery begins. The contractor will also be responsible for providing information to HCFA for the development of an interim *Report to Congress*.

Dialyzer Reuse: A Cohort Study

Project No.: 18-C-90045/3
Period: February 1992-December 1996
Funding: $ 476,716
Award: Cooperative Agreement
Principal Investigator: Harold I. Feldman, M.D.
Awardee: University of Pennsylvania
School of Medicine
Philadelphia, PA 19104-6095
HCFA Project Officer: Joel W. Greer, Ph.D.
Division of Health Information and Outcomes
Mandate: Omnibus Budget Reconciliation Act of 1986 (Public Law 99-509)

Description: The study was to determine the impact of reusing hemodialyzer membranes on the health status of end stage renal disease patients undergoing chronic hemodialysis in the United States, using the 1986-87 incident cohort. The study used an intent-to-treat model based on reuse at the 91st day following initiation of dialysis therapy. The analysis used proportional hazards modeling with patient survival as the primary outcome.

Status: The final report was published in the *Journal of American Medical Association (JAMA)*. See Feldman, H. I., Kinosian, M., Bilker, W.B., Simmons, C., Holmes, J.H., Pauly, M.V., and Escarce, J.J: "The Effect of Dialyzer Reuse on Survival of Patients Treated with Hemodialysis." *JAMA*, Volume 276, Number 8, pp. 620-25, August 28, 1996.

End Stage Renal Disease Research Studies

Project No.:	17-C-90085/3
Period: February 1992-June 1995	
Funding:	$ 450,000
Award:	Cooperative Agreement
Principal Investigator:	Philip J. Held, Ph.D.
Awardee:	University of Michigan Kidney Epidemiology and Cost Center 315 West Huron, Suite 420 Ann Arbor, MI 48103
HCFA Project Officer:	Joel W. Greer, Ph.D. Division of Health Information and Outcomes
Mandate:	Omnibus Budget Reconciliation Act of 1986 (Public Law 99-509)

Description: No-cost extensions until September 24, 1996 were received and the project has been completed. The purpose of this project was to perform cost studies of major issues for the end stage renal disease program. Ongoing studies include an analysis of the dialysis facility cost reports, standardized hospitalization rates, and cost effectiveness on different treatment modalities.

Status: Some papers funding in whole or in part have been published in professional journals:

- "Association of Dialyzer Reuse Practices and Patient Outcomes:" *American Journal of Kidney Diseases (AJKD)*
- "Effect of Race on Access to Recombinant Human Erythropoietin in Long-Term Hemodialysis Patients." *Journal of the American Medical Association (JAMA)*
- "The Impact of HLA Mismatches on the Survival of First Cadaveric Kidney Transplants." *New England Journal of Medicine*
- "Hemodialysis in the United States: What Is the Dose and Does It Matter?" *AJKD*
- "On Replacing Peer Review with Legal Challenge in Scientific Research: An Opinion" *Seminars in Dialysis*
- "Recommendations for Reducing the High Morbidity and Mortality of United States Maintenance Dialysis Patients." *AJKD*
- "Using USRDS Generated Hospitalization Rates to Compare Local Dialysis Patient Hospitalization Rates to National Rates." *Kidney International*
- "Hemodialysis Vascular Access Morbidity in the United States." *Kidney International*
- "Predictors of Type of Vascular Access in Hemodialysis Patients." *JAMA*

Impact of Complicating Diseases on End Stage Renal Disease Outcomes and Costs

Project No.:	17-C-90082/3
Period: February 1992-December 1994	
Funding:	$ 321,044
Award:	Cooperative Agreement
Principal Investigator:	Neil Powe, M.D.
Awardee:	John Hopkins University School of Medicine 720 Rutland Avenue Baltimore, MD 21205
HCFA Project Officer:	Lawrence E. Kucken Division of Health Information and Outcomes
Mandate:	Omnibus Budget Reconciliation Act of 1986 (Public Law 99-509)

Description: The purpose of this project is to examine patient and provider characteristics associated with complicating diseases within the end stage renal disease (ESRD) population and the effects of these disease patterns on patient outcomes, utilization, and costs. The study design involves longitudinal analyses of ESRD patients to determine risk factors associated with the onset of complicating illness and outcomes such as hospitalization and mortality. The study period covers the years from 1984 through 1990 and will draw upon data from the ESRD

Program Management and Medical Information System and other Medicare statistical files.

Status: The final report is currently under review.

Medicare Beneficiaries Receiving Chronic Renal Dialysis Not Identified as Having End Stage Renal Disease

Project No.: HCFA-93-0979
Period: August 1993-May 1994
Funding: $ 24,813
Award: Contract
Principal Investigator: Dennis Cotter
Awardee: The Medical Technology and Practice Patterns Institute
2121 Wisconsin Avenue, N.W.,
Suite 230
Washington, D.C 20007
HCFA Project Officer: Joel W. Greer, Ph.D.
Division of Health Information and Outcomes
Mandate: Omnibus Budget Reconciliation Act of 1986 (Public Law 99-509)

Description: The final analyses have been completed and the final report is being prepared. The Medical Technology and Practice Patterns Institute (MTPPI) has characterized Medicare beneficiaries who submit bills indicating that they receive chronic renal dialysis, but who are not identified as having end stage renal disease (ESRD). MTPPI will estimate the impact of these persons on ESRD program enrollment, incidence, demographic characteristics, and costs.

Status: The final report was received in August 1996 and is under review.

Study of the Natural History of End Stage Renal Disease in Persons with Diabetes

Project No.: 500-92-0021DO04
Period: July 1994-June 1997
Funding: $ 111,074
Award: Delivery Order in Master Contract
Principal Investigator: Robert J. Rubin, M.D.
Awardee: Lewin/VHI, Inc.
HCFA Project Officer: Paul W. Eggers, Ph.D.
Division of Health Information and Outcomes

Description: This project will analyze the natural progression of end stage renal disease (ESRD) among persons with diabetes to acquire further knowledge about the risk factors associated with this progression. This will be accomplished by linking he second National Health and Nutrition Examination Survey with the ESRD Program Management and Medical Information System at the Health Care Financing Administration (HCFA). The cumulative incidence of ESRD among persons identified as diabetic or having impaired glucose tolerance will be calculated and risk factors will be identified.

Status: Relevant variables have been identified, and creation of the files for matching has begun.

Dialysis Modality Selection Among Patients Attending Freestanding Dialysis Facilities

Funding: Intramural
HCFA Project Director: Michael Kendix, Ph.D.
Division of Health Information and Outcomes

Description: Persons with end stage renal disease (ESRD) are eligible to receive dialysis services under the Medicare program. An individual-level analysis was performed to determine the factors associated with the modality selected by patients; namely in-center hemodialysis, continuous ambulatory peritoneal dialysis (CAPD), continuous cycling peritoneal dialysis (CCPD), and home hemodialysis. A series of logistic regressions was estimated using program data for 73,448 ESRD Medicare patients attending freestanding dialysis facilities. The results showed first, that ethnic minorities are less likely to select CAPD, CCPD, and home hemodialysis. Second, income was positively associated with selecting a home-based modality. Third, patients attending for-profit dialysis facilities were less likely to select CAPD, CCPD, and home hemodialysis. Fourth, patients attending facilities owned by a large chain were less likely to select CAPD and home hemodialysis, but more likely to select CCPD. Fifth, patients who were younger, had non-systemic precipitating causes of ESRD, and a shorter duration of ESRD, were more likely to select CAPD and CCPD. Sixth, women were more likely to select CAPD and less likely to select home hemodialysis. Finally, patients in larger facilities are more likely to select CAPD, CCPD, and home hemodialysis; that is, there are economies of scale with respect to these modalities being selected.

Status: The project is in the final stages.

Appendix A
Glossary of terms

Access device - A piece of equipment or a mechanism designed to provide access to the patient's bloodstream (for hemodialysis) or to the peritoneal membrane (for peritoneal dialysis).

Agreement - A written document executed between an ESRD facility and another facility in which the other facility agrees to assume responsibility for furnishing specified services to patients and for obtaining reimbursement for those services.

Arrangement - A written document executed between an ESRD facility and another facility in which the other facility agrees to furnish specified services to patients but the ESRD facility retains responsibility for those services and for obtaining reimbursement for them.

Backup dialysis - A dialysis session furnished to an ESRD patient which is outside the patient's routine dialysis setting; e.g., a home patient dialyzing in the facility or an in-facility patient transferred to a backup facility.

Backup hospital - A hospital with which a dialysis facility has a written agreement under which inpatient hospital care or other hospital services are available promptly to the dialysis facility's patients when needed.

Cadaveric transplant - The surgical procedure of excising a kidney from a cadaver and implanting it into the patient.

Centers by number of transplants - Centers performing a specified number of transplants for the survey period.

Chronic maintenance dialysis - Dialysis regularly furnished to an ESRD patient in either a hospital-based, independent (non-hospital based), or home setting.

Continuous ambulatory peritoneal dialysis (CAPD) - A type of peritoneal dialysis in which the patient performs dialysis at home, using special supplies, but without the need for a dialysis machine.

Continuous cycling peritoneal dialysis (CCPD) - A variant of CAPD in which a machine is used at home to make exchanges at night automatically.

Dialysis - A process of maintaining the chemical balance of the blood when the kidneys have failed; specifically, a process by which dissolved substances are removed from the patient's body by diffusion from one fluid compartment to another across a semi-permeable membrane. The types of dialysis currently used are hemodialysis, intermittent peritoneal dialysis (IPD), continuous ambulatory peritoneal dialysis (CAPD), and continuous cycling peritoneal dialysis (CCPD).

Dialysis center - A hospital unit which is approved to furnish the full spectrum of diagnostic, therapeutic, and rehabilitative services required for the care of ESRD dialysis patients (including inpatient dialysis but excluding transplantation). Services may be furnished directly or under arrangement with another approved provider.

Dialysis facility - A unit (hospital-based or freestanding) which is approved to furnish dialysis service(s) directly to ESRD patients.

Dialysis station - The treatment area which is designed and equipped to provide adequate and safe dialysis therapy, as well as privacy and comfort for patients.

Dialysis treatment - One session of dialysis, either in a dialysis facility or at home.

Dialysis treatments given (other than home) - The times dialysis machines were used in a dialysis facility to provide patient treatments.

Disposition of cadaveric kidneys - The final disposition of acquired cadaveric kidneys (e.g., transplanted, used for research, or discarded).

End stage renal disease (ESRD) - That stage of renal impairment which is irreversible and permanent and requires dialysis or kidney transplantation to ameliorate uremic symptoms and maintain life.

ESRD facility - See dialysis facility

ESRD network - An approved organized group of ESRD providers in a designated area which, by their type and location and because of local referral patterns, collectively furnish the necessary care for ESRD patients in the population served.

ESRD patient - A person with irreversible and permanent kidney failure.

ESRD service - Treatment or care (e.g., dialysis, transplantation, supplies) usually rendered to those diagnosed as having ESRD.

Erythropoietin (EPO) - A drug used to treat anemia associated with chronic renal failure.

Facilities/centers surveyed - Individual facilities/centers completing the annual ESRD Facility Survey form.

Hemodialysis - A method of dialysis in which blood from a patient's body is circulated through an external device or machine and returned to the patient's bloodstream. Such an artificial kidney machine usually is designed to remove fluids and metabolic end products from the blood stream by placing the blood in contact with a semi-permeable membrane which is bathed on the other side by an appropriate chemical solution referred to as dialysate.

Home patients - Those patients who maintain their own dialysis equipment and/or supplies at home and perform their own treatment alone or with assistance of a helper.

Inpatient care only - A renal dialysis center which performs backup services for dialysis facilities and performs 20 percent or less of its dialysis on an outpatient basis.

Inpatient dialysis - Dialysis which, because of medical necessity, is furnished to an ESRD patient on a temporary inpatient basis in a hospital.

Intermittent peritoneal dialysis (IPD) - A procedure that introduces dialysate into the abdominal cavity to remove waste products through the peritoneum (a membrane which surrounds the intestines and other organs in the abdominal cavity). It functions in a manner similar to that of the artificial semi-permeable membrane in the hemodialysis machine.

In-unit (in-facility) patients - Those patients whose self-dialysis or staff-assisted dialysis is performed in a dialysis unit or facility.

Living-related donor transplant - The surgical procedure of excising a kidney from a living relative of the patient and implanting it in the patient.

Living-unrelated donor transplant - The surgical procedure of excising a kidney from a living person not related to the patient and implanting it in the patient.

Lost to follow up (LTFU) - A category of patients whose current status is unknown to the facility which at one time had been dialyzing/following the patient.

Medicare ESRD beneficiary - A person qualifying for Medicare by means of the renal disease provision of the law.

Non-viable kidneys - Cadaver kidneys that are not suitable for transplantation (may be used for research or discarded).

Organ procurement - The process of acquiring donor kidneys.

Organ Procurement Agency (OPA) - An organization which performs or coordinates the performance of all the following services: harvesting of donated kidneys; preservation of donated kidneys; transportation of donated kidneys; and maintenance of a system to locate prospective recipients for harvested organs.

Outpatient dialysis - Dialysis furnished on an outpatient basis at a renal dialysis center or facility. Outpatient dialysis includes staff-assisted dialysis and self-dialysis.

Patients awaiting transplant - Patients who are medically able to receive a transplant, have given consent for a transplant, and are on an active transplant list.

Peritoneal dialysis - See intermittent peritoneal dialysis.

Program Management and Medical Information System (PMMIS) - A computer-based system containing medical and demographic data that deals primarily with current Medicare-eligible ESRD patients but also maintains historical information on persons no longer classified as ESRD patients by reason of death or successful transplantation. In addition, it contains information on ESRD facilities and facility reimbursement.

Provider number - A six-digit number assigned by HCFA for the purposes of identification and billing.

Receiving service - Patients who receive either kidney dialysis or kidney transplant services.

Renal dialysis center - See dialysis center.

Renal dialysis facility - See dialysis facility

Renal network - See ESRD network.

Renal transplant center - A hospital unit which is approved to furnish transplantation and other medical and surgical specialty services for the care of ESRD transplant patients, including inpatient dialysis furnished directly or under arrangement.

Restarted dialysis - A category of ESRD patients who were on chronic maintenance dialysis, left that treatment category for reasons other than a transplant (e.g., recovered kidney function), then returned to dialysis.

Self-care services - Services provided by a dialysis facility or center to patients who have been trained to perform self-dialysis.

Self-dialysis - Dialysis performed with little or no professional assistance by an ESRD patient who has completed an appropriate course of training.

Self-dialysis patients - Patients who have been trained in dialysis techniques and dialyze themselves in a dialysis facility or at home with little or no professional assistance

Self-dialysis training and home training - Programs that train ESRD patients to perform self-dialysis in a dialysis facility or at home with little or no professional assistance and train other individuals to assist patients in performing self-dialysis or home dialysis.

Staff-assisted dialysis - Dialysis performed by the staff of the renal dialysis center or facility.

Started for first time ever - A category of ESRD patients who have been newly diagnosed as having ESRD and have been stabilized on dialysis. During the survey period, these patients began their initial course of staff-assisted chronic maintenance dialysis or completed a course of self-dialysis training and began dialyzing at home or self-dialyzing at a facility.

Survey period - The period January 1 through December 31 of each year for which all ESRD facilities must complete a HCFA-2744, ESRD Facility Survey.

Training services - See self-dialysis training and home training.

Transient patients - Patients who are treated by facilities episodically (less than 51 percent of the survey period); e.g., vacationers.

Transplant - The surgical procedure that involves excising an organ from either a cadaver or a living donor and implanting it in the patient.

Transplant center - See renal transplant center.

Transplants performed - The number of kidneys transplanted by donor source type; i.e., living-related, living-unrelated, or cadaveric.

Treatment setting - The type and location of the dialysis treatment being performed; i.e., self-dialysis (in-unit or home), self-dialysis training, or staff-assisted dialysis.

Appendix B
Entitlement provisions

The 1972 Amendments to the Social Security Act extended Medicare coverage to individuals with end stage renal disease beginning July 1973, the month the law became effective. End stage renal disease is that stage of kidney impairment which is irreversible, cannot be controlled by conservative management alone, and requires dialysis or kidney transplantation to maintain life.

As soon as an individual knows that he needs maintenance dialysis treatments, he should apply for Medicare at any social security office. Social Security representatives will help the applicant furnish all necessary information and answer questions he may have about the Medicare program. One of the essential forms to be completed will be a HCFA-2728, End Stage Renal Disease Medical Evidence Report Medicare Entitlement and/or Patient Registration. Notification of entitlement will be mailed later. If a person cannot come to the Social Security office, arrangements can be made so that a representative can visit the person to take a Medicare application, HCFA-43, or the facility can asset the patient in completing and forwarding this application to the social security office.

When entitlement to hospital insurance (Part A) is established, the individual is automatically enrolled for supplementary medical insurance (Part B) to begin the same month, unless he specifies he does not want this coverage.

It is not in the best interest of most persons with end stage renal disease to decline Part B coverage because many renal services, such as outpatient dialysis treatments, are covered only under Part B. A person qualifying for Medicare by means of the renal disease provision is eligible for the full range of benefits available under the health insurance program, not just for those services relating to renal care.

Requirements for eligibility

To qualify for Medicare under the renal provision, a person must have end stage renal disease and either: be entitled to a monthly insurance benefit under title II of the Social Security Act (or an annuity under the Railroad Retirement Act); or be fully or currently insured under Social Security (railroad work may count); or based on Medicare qualifying government employment; or be the spouse or dependent child of a person who meets at least one of these last two requirements. There is no minimum age for eligibility under the renal disease provision. An application for Medicare must be filed.

When entitlement begins

Provided all eligibility requirements are met, a person's Medicare entitlement, based on the renal provision of the law, begins with the earliest of the following:

- The third month after the month in which a course of dialysis is initiated. For example, if a course was initiated any time during the month of January, the data of entitlement would be April 1
- If earlier, the month a course of maintenance dialysis begins if the individual participates within the waiting period in a self-dialysis training program in an approved facility and is expected to complete the training successfully and self-dialyze thereafter.
- The month of transplant.
- The month an individual is admitted to an approved hospital for procedures preliminary to a transplant, if the transplant takes place within the following 2 months, Medicare coverage will begin the second month prior to the month the actual transplant takes place, or, if earlier, the first day of the third month after maintenance dialysis began.

When entitlement ends

A person's entitlement to this provision terminates with the earliest of the following events:

- The day of death; or
- The last day of the 12th month after a person no longer requires maintenance dialysis treatments; or
- The last day of the 36th month after the month in which the individual receives a kidney transplant. If within 36 months after transplantation the person requires another transplant or returns to dialysis, there is no interruption in entitlement.

Appendix C
End stage renal disease data sources

Form title and number	Primary purpose	PMMIS function	Research potential
UB-92 (HCFA-1450)	Billing	Dialysis incidence Inpatient stay diagnosis	Prevalence and outcome analyses, morbidity.
UNOS-Transplant Candidate Registration Form	Clinical information	Patient wait list information	Clinical research: outcome analyses
UNOS-Kidney Transplant Recipient Registration Form	Clinical information	Transplant incidence	Clinical research: Efficacy of treatment and outcome analyses.
UNOS-Kidney Transplant Recipient Follow-up Form	Clinical rehabilitative information	Patient and graft survival and rehabilitation	Clinical research: Efficacy of treatment and outcome analysis.
ESRD Death Notification (HCFA-2746)	Death incidence	Death incidence, cause of death	Outcome analyses.
End Stage Renal Disease Medical Evidence Report Medicare Entitlement and/or Patient Registration (HCFA-2728-U3)	Entitlement and patient registration	Identification of primary disease and first date of treatment	Incidence and outcome analyses.
ESRD Facility Survey (HCFA-2744)	Number of Medicare and non-Medicare patients by modality	National overview of Medicare and non-Medicare patients by modality.	Incidence, prevalence, and outcome analyses.
ESRD Beneficiary Selection (HCFA-382-U4)	Billing	Home dialysis	Prevalence and outcome analyses.

NOTE: PMMIS is Program Management and Medical Information System. HCFA is Health Care Financing Administration. CRD is chronic renal disease. UB is uniform bill. UNOS is United Network for Organ Sharing.

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